THE USE OF GIS IN TOURISM PLANNING STRATEGIES FOR MONGOLIA: THE CASE OF KHÖVSGÖL NATIONAL PARK

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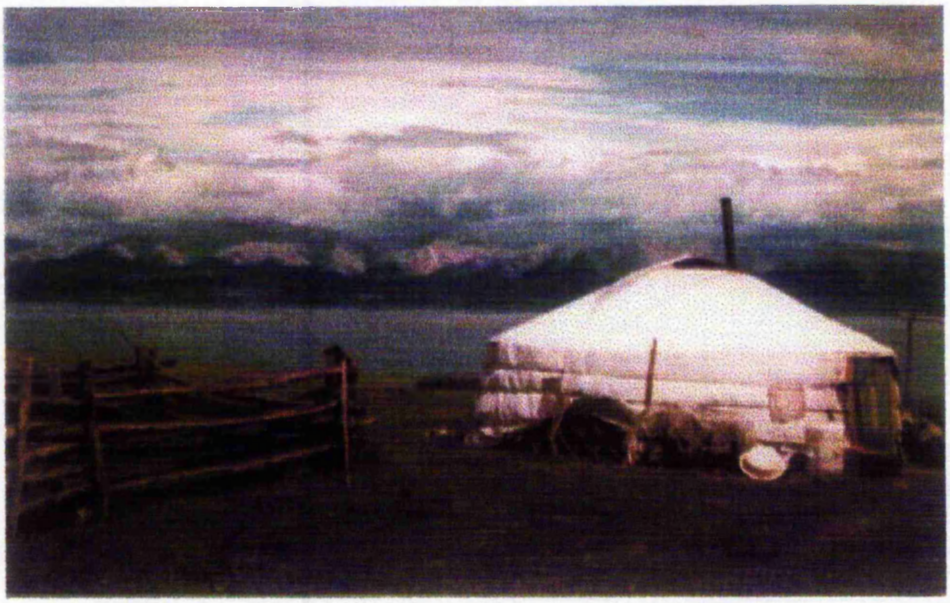
Volume 1

For the people of Khövsgöl



A note on Transliteration

Throughout this document, the researcher has tried to keep to standard transliteration of place names and terminology from Mongolian to English. Thanks to Dr. D. Sneath for his assistance and comments. However, some variation occurs, particularly in maps or data from external sources. In these cases, I have retained the original transliteration, as it appears in the source.

ABSTRACT

Khövsgöl National Park is facing transitional impacts caused by policies designed to bring about the transition to a market economy and an increase in tourism to the region (where non-locals have been employed and the UN Biodiversity project perceive changes in the wildlife distribution within the Park boundaries). Each of these has also had a significant economic influence upon the local people. The Park supports a semi-nomadic pastoralist culture where local people move with their animals to different grazing areas each season. Over a number of years these movements may cover substantially the same area, although they depend largely upon the structure of the family unit and the climate.

In addition to these influences, Khövsgöl is constrained by its designation as a Protected Area, which prevents certain types of industrial development from taking place. To address this and to increase the stability of the economy of the region, tourism has been identified as a potentially lucrative industry, with a focus upon "ecotourism" – seen as being environmentally friendly and non-polluting by the National Park Administration.

A management plan has now been drawn up by the local National Park management officials and the UN Biodiversity project (McCusker & Tömörsükh, 1996). The plan outlines the current status of natural resources in the Park and suggests areas of focus for management with an appropriate timescale. This research will address these needs by collating environmental, social and tourism data about the National Park for the purpose of a Geographical Information System (GIS). This will provide the basis for decisions to be made upon the environmental effects of tourism development and other activities. The database may highlight certain spatial regions or development problems and thus contribute to the construction of long and short-term objectives. As a tool for management, its role in the efficiency of the overall development strategy will also be under consideration.

Keywords:

Mongolia
Khövsgöl National Park
Protected Areas
Management
GIS

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ABBREVIATIONS

ASEAN	Association of South East Asian Nations
AVHRR	Advanced Very High Resolution Radiometer
CAD	Computer Aided Design
CD	Compact Disc
CGIS	Canada Geographic Information System
CITES	Convention on International Trade in Endangered Species
CLDS	Canada Land Data Systems
COGO	Co-ordinate Geometry
CORINE	Co-ordinated Information of the European Environment
DBMS	Data Base Management System
DCE	Distributed Computing Environment
DCW	Digital Chart of the World
DEM	Digital Elevation Model
DK	Don't Know
DoE	Department of the Environment
DTM	Digital Terrain Model
DXF	Drawing Exchange Format
EAP	East Asian Pacific
EIA	Environmental Impact Assessment
ESA	Environmentally Sensitive Areas
ESRI	Environmental Science Research Institute
EU	European Union
GCP	Ground Control Point
GDP	Gross Domestic Product
GIG	Gigabyte(s)
GIS	Geographical Information System
GPS	Global Positioning System
HEP	Hydro-Electric Power Station
IATA	International Agents of Tourism Association
IMF	International Monetary Fund
IT	Information Technology
IUCN	International Union for the Conservation of Nature
IUOTO	International Union Official Travel Organisation
kW	KiloWatts (measure of electricity)
LAC	Limits of Acceptable Change
LAN	Local Area Network
Mb	Megabyte(s)
MIAT	Mongolian Civil Air Transport
MNE	Ministry of Nature and Environment (Mongolian)
MPR	Mongolian People's Republic
MTI	Ministry of Trade and Industry (Mongolian)
NGO	Non-Government Organisation
NIC	Newly Industrialised Country
NOMIS	National Online Manpower Information Service

NTF	National Transfer Format
OCR	Optical Character Recognition
ORV	Off-Road Vehicle
PA	Protected Area
PC	Personal Computer
PRA	Participatory Rural Appraisal
ROS	Recreational Opportunity Spectrum
RRA	Rapid Rural Appraisal
SDSS	Spatial Decision Support System
SPA	Special Protected Area
SPOT	System Pour le Observation de Terrain
SSI	Semi-Structured Interview
SSSI	Sites of Special Scientific Interest
Tg	Tugrik
TIN	Triangulated Irregular Network
TM	Thematic Mapper
UN	United Nations
UNBP	United Nations Biodiversity Project
UNDP	United Nations Development Project
UNEP	United Nations Environment Project
UNESCO	United Nations Economic and Social Organisation
UPS	Uninterruptable Power Supply
VFR	Visiting Friends and Relatives
WAN	Wide Area Network
WCMC	World Conservation Monitoring Centre
WTO	World Tourism Organisation

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INTRODUCTION

Information systems are used within organisations to help manage, store and manipulate data about business processes, providing support for decision-making by managers. A Geographical Information System (GIS) stores information spatially, that is, the emphasis is strongly upon **where** an event or attribute occurs. Although some information systems are built to be 'knowledge based', that is, they operate under a set of pre-determined 'rules' which influence how they interpret and present data, most GIS systems do not attempt to make decisions for the manager. Instead, they are decision **support** systems, allowing the user flexibility in modelling and integrating various types of data. Interpretation of the outcome and any decision-making rests wholly in the hands and expertise of the manager.

The GIS confers an enhanced ability to undertake complex modelling more flexibly, more frequently and with greater accuracy than traditional paper-based models. The strength of a GIS lies in its ability to keep track of large amounts of data and disseminate this information to large numbers of people for relatively little cost. To duplicate all the information held in Khövsgöl National Park Headquarters and distribute it to the MNE (let alone any other Mongolian Protected Areas, government bodies or scientific institutions) would require an aircraft or truck and several people to load and unload it. In addition there would be the cost of photocopying the reams of paper and hand-drawing maps. The information would not arrive in any particular order and those receiving it would have to collate and re-file it all by hand.

The same amount of data could be held in digital format on a removable storage device (a single high-density disk or CD), weighing no more than a few grams. It would be stored in a format that could be copied for the cost of US$2 or less and made available to any collaborating institutions. Datasets on the disk could be easily located at any time, and printed out individually for local dissemination. Maps could be updated quickly and printed out, in the fraction of the cost in terms of time and manpower, as traditional hand-painting methods.

In order to be considered a National Park by the IUCN, the Khövsgöl National Park Administration need to reconcile conservation strategy with that of the production of income through other means, such as tourism. Table 4.2 illustrates some of the goals of a National Park as 'maintaining the ecosystem in its 'natural' state, maintaining ecological diversity and environmental regulation, conserving genetic resources, conserving the watershed and providing flood control, providing a recreation and tourism service, protecting scenic beauty and a contribution to rural development. Each of these objectives will now be considered in terms of current Park Management and the role of GIS in helping to achieve them.

Firstly, what is the 'natural' environment? Harper (1995) argues that wildlife throughout the Park should be preserved and local people should be prevented from hunting or trespassing upon certain 'sensitive' areas. Certainly, a number of laws have been put into place to restrict hunting. However, this decrease in hunting (especially of wolves) has led to a significant increase in their numbers, affecting livestock. Moreover, numbers of wild animals within the National Park boundaries have been falling. Harper blames this on the effects of poaching by local people, but perhaps the increase in wolf numbers is also to blame. If hunting by local people has increased, then it is due to the decline in the standard of living; local people need to supplement their diet in winter in the only way they can.

Moreover, changes in the working practices of local people will also change the surrounding environment. The ecosystem is built upon traditional patterns of grazing and use by livestock. Altering these patterns, or forcing local people to change their way of life, will ultimately lead to a change in the local ecology. The most important issue is what the National Park consider to be a 'natural' state, how they propose to identify this state and how to recognise any changes away from this 'natural condition'.

In terms of Park management, a GIS could help this process. Although traditional, manual methods of monitoring could be employed, they do not respond quickly to changes in the environment and once degradation has been identified, further studies are necessary to research the causes of the degradation and the most appropriate measures to be undertaken to combat change. By the time the results of these studies are disseminated among the decision-makers, the situation may well have already changed. A GIS would allow this identification process to be quickly ratified and potential causes identified and modelled. The nature of the GIS would also allow enhanced communications between local officials and those at the Ministry for Nature and Environment (MNE). Further, the need for legislation (if required) can be documented and illustrated before decisions which might allow inappropriate developments to take place are taken.

Secondly, a National Park has to maintain ecological diversity and environmental regulation. To date, Khövsgöl National Park has concentrated upon this objective, without taking the other objectives into consideration. Since they have focused so strongly upon the natural environment, they have often pursued these objectives with little obligation towards the influence or needs of local people. This means that the management strategy so far has been shortsighted, concentrating upon only some elements of the ecology of the region and not others. This is compounded by the collection of large amounts of environmental data by a number of different expeditions to the region. These are stored at the National Park Headquarters and are, effectively, snapshots in time. Little attempt has been made to cross-check between them and, if anything, the National Park administration is always looking backwards at the results of previous management efforts, rather than looking forwards to what is happening today. Data collated by foreign groups also has to be translated, which depends upon the availability and quality of the translator's ability to interpret complex scientific reports. A GIS is not bounded by problems of language, since all data exists digitally. Its use would allow researchers to collect and prepare data in a form suitable for inclusion into the Park's database. Although attribute data might have to be translated, it would mean that all research in the Park would be able to be integrated into the database and made available to decision-makers at all levels. It would also relate to specific areas of the Park and not rely upon hearsay or inaccurate distance or location. Moreover, evidence collected by different groups at different times could be quickly compared, rather than separate documents having to be read and a report produced. A GIS would also be a tangible base upon which to initiate a communications network with local people and government officials. It would act as a 'visible target' to which data would be focused and compared with other information, rather than people being suspicious about the data user's intent, or where the data would actually go.

Thirdly, the National Park must conserve genetic resources within its borders. Evidence from Harper (1995) indicates that there were more Ibex and other wildlife resources found outside the Park boundaries than inside, although evidence from local people suggests wolf numbers are increasing. If this is true, then the National Park administration is failing to conserve the genetic resources within the Park. Local people also gather a number of plant species for nutritional, but mainly medicinal purposes. Collection has becomes more important since the standard of living has dropped and local people are unable to get the medicines they need. In the absence of contemporary medicines, more people are relying upon traditional remedies for ailments. Plant species which are on the endangered species list, number among the plants sought after by local people.

The use of a GIS cannot directly improve people's standard of living, but it may help managers make more appropriate decisions about where to locate resources and develop appropriate industries that are acceptable within the Park.

Fourthly, the National Park should conserve the watershed and provide flood control. As perhaps the most visible and tangible of the Park's resources, Khövsgöl Lake has been the focus of the strictest regulations so far. Much scientific study has been undertaken on the lake hydrology and biology, but although information has been widely collected, it has not necessarily been integrated. An Information System that could model water flows within the lake and model these against current levels of pollution, or even against types and levels of development along the lake shore, might give some indication of any potential problems of pollution that might be occurring now, or in the future. This would allow appropriate measures to be included in a budget and catered for. Although the present systems of monitoring pollution would eventually pick up any problems, they would be a reaction to an existing problem which may already have caused extensive irreversible damage.

Fifthly, the National Park should provide a recreation and tourism service. This research concentrates on the use of GIS as a tool for managing this aspect of the Park services. Tourism is regarded by the National park Authorities as a valuable industry suitable for growth within a Protected Area, which will generate a substantial amount of foreign currency and one which has less potential to degrade the environment than other industries which were previously located in the area. However, the National Park is faced with a number of obstacles to this, not least of which is the assumption that all visitors coming to Khövsgöl are ecotourists and, since ecotourists are supposed to be better for the environment than other tourist types, then all tourist coming to Khövsgöl are 'good for the environment'. Another major problem is the lack of expertise in planning and management for tourists. The deputy director for Khövsgöl National Park has been given the title of 'Director of Ecotourism', but he is unsure of what his job entails. This is symptomatic of the whole management ethos, which regards the development of tourism as an 'added extra' which can be 'bolted on' to their existing environmental planning strategy rather than developing it as part of a new overall management policy. This is partially exacerbated by the MNE who seem to be driving the initiatives from Ulaanbaatar with little heed of the implications within Khövsgöl.

Since there is very little clear direction on tourism planning and development, the Park Authorities have taken a back seat, preferring to manage developments by private companies given the authority to locate there by the MNE. By advising on strict environmental guidelines, the National Park Authorities feel that they are in some way integrating tourism development into their management plans. This is a comfortable situation for them, as they are used to a 'management by objectives' approach, handed down from higher authorities. Meanwhile, tourism and recreation facilities within the park are provided by private companies, not the National Park. They have little, if any, control over the numbers, types or demands of tourists, or the management of the sites themselves. In consequence, the majority of currency that tourists bring into the Park goes straight out again, directly to the private companies, bypassing the National Park and local people. The only revenue that the National Park gains from tourists, is a Park entrance fee per day and a percentage of the tourist camp profits, neither of which are adequately monitored to ensure correct payment.

Use of a GIS here would change management practices in a number of crucial ways. It would encourage all data to be integrated, thus promoting tourism as a theme within the overall management plan for the National Park, rather than an 'add-on'. It would allow managers greater control in the siting of new developments. By requesting the location of a proposed development from the MNE, local Park managers could conduct their own analysis of its merits as a proposed site and suggest modifications or revisions as necessary, backed up with evidence from the database. It would stop managers from accepting inappropriate direction from MNE and would encourage them to take more direct control of the management of the Park. By having the time and control to take an objective look at the Park, measures may well be found whereby the Park Administration can have greater input into the development of a tourism infrastructure, including the construction of their own camps and greater control over revenue production and disbursement.

Sixthly, without control over developments, the National Park authorities cannot hope to protect scenic beauty. Although scenic beauty is a subjective term, managers must be aware that developments sanctioned by MNE in Ulaanbaatar could not have been sanctioned by anyone who has an intimate knowledge of the Park and the effect of the development on the landscape. Moreover, there is a tendency for tourism companies to locate their camps in the areas of the Park that they perceive as most picturesque. Without proper control over planning, developments could be constructed which are not in keeping with building styles of the region and which are visible from large areas of the Park. A GIS could help to model the 'viewshed' or the areas from which a development is visible through calculating the line-of-sight using a digital elevation model. This would also include the prevention of any industries such as resource extraction (mining). Phosphite extraction is another source of revenue that has been proposed within the Park boundaries.

Finally, the National Park should contribute to rural development. Again, this is an aspect of management that has so far fallen outside of their existing strategies. Since they have no communication routes through to local government officials and the majority of benefits from development in the Park have bypassed local people, there is little that Park officials are seen to be doing to improve matters. This is reflected in the views of local people who feel that the National Park Administration does not help them and nor do they see ways in which it could help them. The UN Development Project has had some input into the development of the economy in Hatgal, supporting a number of self-help projects such as the bakery (in 1995), but these are not seen to be coming from the National Park and so the initiatives are disassociated from the Park in the minds of local people.

Chapter One

REGIONAL OVERVIEW

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REGIONAL OVERVIEW

1.1: Introduction

This research addresses the problems of managing sustainable tourism in a Protected Area of a Developing Country. The term 'sustainable tourism' is used, because by definition it implies production of revenue from tourism that can be sustained over the greatest period of time:

> "development which meets the needs of the present without compromising the ability of future generations to meet their own needs"
>
> (Cater, 1994:7)

Khövsgöl National Park, the region of study, has long been a traditional destination for domestic Mongolian tourism, but since its designation as a Mongolian National Park, its governing authorities have regarded the promotion of 'ecotourism' as of prime importance. The region has lost virtually all of its industry as a result of the virtual closure of the Russian borders in 1990[1] and the designation of National Park status. Also, the Mongolian government sees tourism as a potentially major industry which will generate large amounts of foreign currency to help boost the National economy.

[1] Although this closure had significant impact upon Mongolia as a whole (overnight, the region which held the 'Industrial centre of the North' was cut off from its trading lifeline), some trade did continue, particularly amongst local people of the region.

This poses several managerial issues for the National Park authorities. On the one hand they are empowered with the responsibility for protecting Khövsgöl and on the other, in order to generate funding to aid this conservation work, they must promote tourism to the region – in itself a potentially negative impact. Their dilemma then is how to maintain tourism without endangering the ecosystem they are bound to protect.

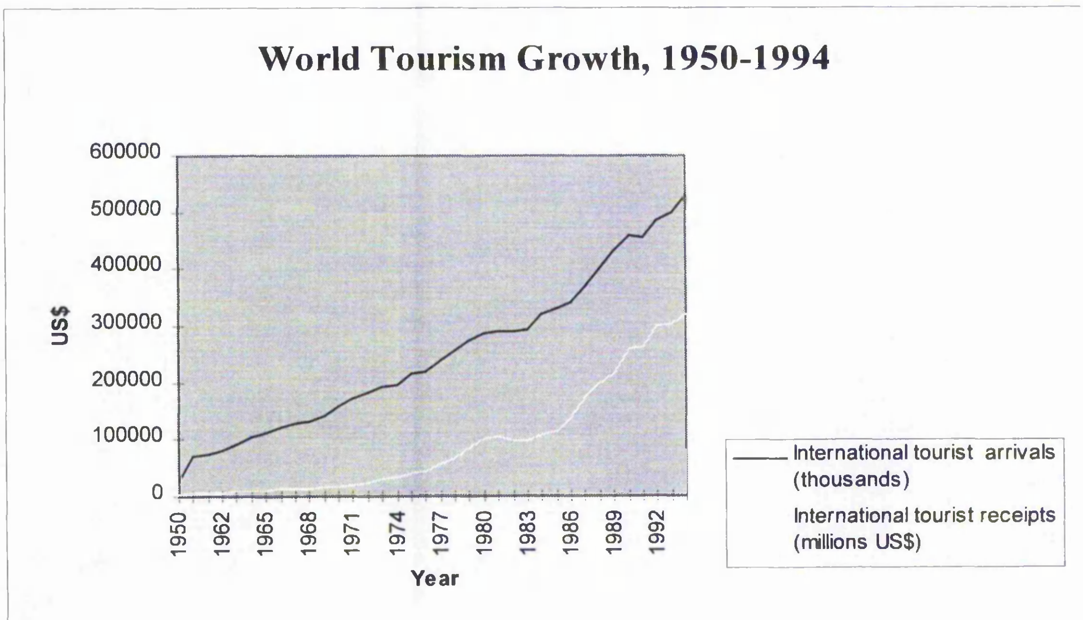
Additionally, many management officials have come from scientific backgrounds and have received little – if any – management training. They find it difficult to manage the economic demands of the Park and its role in the business of tourism, as well in some cases, as the management of personnel working for them. This period of transition is also a period of learning for them. They start from an assumption that 'ecotourism' makes very little impact upon the environment and therefore is the most appropriate form of tourism for Khövsgöl.

This research will examine these issues, beginning with tourism trends and background information about Mongolia and Khövsgöl (Chapter 1). Chapter 2 will explore the tourism concept in terms of supply and demand, leading to the manner in which tourism can impact upon the environment and local communities (Chapter 3). This discussion will then tend towards different management strategies (Chapter 4) and discuss a particular management tool – Geographical Information Systems (Chapter 5) with respect to collecting, storing and analysing data for decision-making. Chapter 6 details the methodology used for collecting data required for a detailed management plan for the Park and the results of this are presented in Chapter 7. This research concludes by taking a specific example and using the proposed management plan to demonstrate how conflicts may be resolved (Chapter 8).

This chapter will place Mongolia in the context of global tourism trends and identify its current tourism infrastructure. Khövsgöl (the study region) will then be examined specifically in terms of its tourism infrastructure, demographics and geography, to present a basis for later consideration.

1.2: Global Tourism Trends

From Figure 1.1 it can be seen that tourist arrivals and receipts from tourism have risen proportionally from 1950 to 1994 - outlining the increasing importance of tourism to the world economy.



(Waters, 1994)

FIGURE 1.1: World Tourism Growth

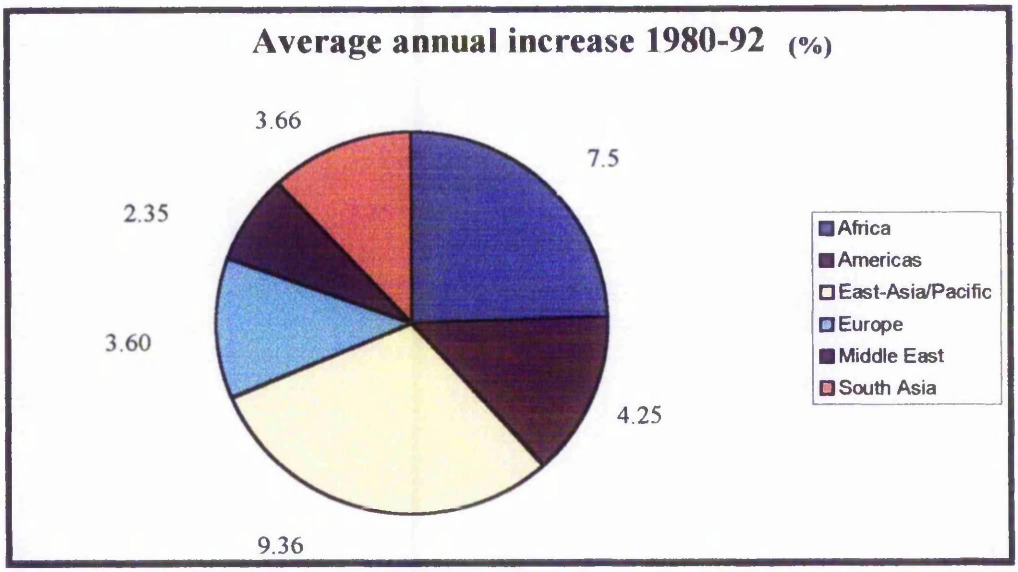
World tourist receipts[2] have increased by 117 percent between 1986 and 1993 (Table 1.1). The greatest increase was experienced by the East Asia and Pacific region (Figure 1.2), whereas the Middle East has increased more slowly due to recent political unrest.

Regions	Series	1986	% Share World Total 1986	1993	% Share World Total 1993
World	A	340891	100	500000	100
	R	140023	100	304000	100
Africa	A	9458	3	17900	4
	R	2970	2	6400	2
Americas	A	70972	21	106500	21
	R	37652	27	87500	29
East Asia/Pacific	A	32539	10	68500	14
	R	16671	12	52600	17
Europe	A	217218	64	296500	59
	R	76057	54	105500	35
Middle East	A	7973	2	7200	1
	R	5003	4	5000	2
South Asia	A	2731	1	3400	0.4
	R	1670	1	2000	1

A = Arrivals (thousands)
R = Receipts (million US$)
(Waters, 1994 from WTO data)

TABLE 1.1: International Tourist Arrivals and Receipts Worldwide by Regions

[2] Data is taken directly from World Tourism Organisation statistics and takes no account of inflation.



(Modified from WTO data in Economist Intelligence Unit, 1995)

FIGURE 1.2 : Annual Average Increase in Tourist Arrivals, by Region

Increasing the popularity of Mongolia as a tourist destination (Table 1.10) is regarded by the Mongolian government as an attractive method of gaining foreign currency to fund infrastructural development (Middleton, 1993), and to this end Mongolian Protected Areas are being promoted for tourism use by the Ministries of Trade and Industry (Middleton, 1993; refer also to discussion on legislation, Section 1.4.4), and Nature and Environment (Wingard, 1995).

Although this increase in tourism (Table 1.1) may benefit private Mongolian tourist companies which manage and provide camps (refer to discussion of camps, Section 1.5.4), there is little evidence of benefits to the local community in Khövsgöl National Park, the study area (Figure 1.11). Khövsgöl provides a habitat for several endangered Mongolian faunal species, and their numbers appear to be declining within the Park boundaries (Bennett, 1995 & Harper, 1995). This is of particular concern for both potential tourists, attracted to Khövsgöl by its natural environment, and also the status of the National Park as it competes for international conservation funding in the future.

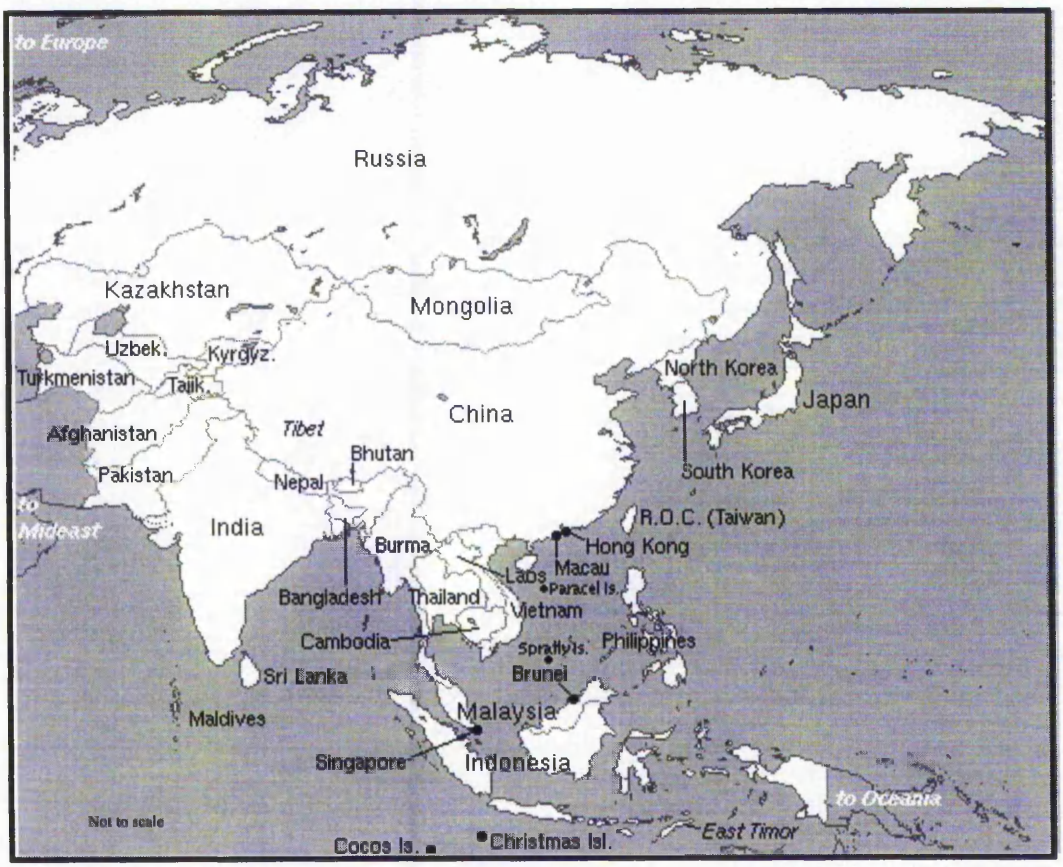
Mongolia was targeted for research since the changes in political structure had created tourism opportunities which would require planning and management. Tourism planning was identified as inefficient for preventing currency leakage from the National Park authorities and the local communities, and legislation (Section 1.4.4) was insufficient to prevent many negative tourism impacts, such as poaching of protected species and camping on non-designated areas.

Therefore it was seen that research into tourism development could be undertaken at a very early stage of expansion, following and evolving with changes occurring over a number of years, and evaluating potential means of management. It was hoped that the use of technology such as Geographical Information Systems (GIS) (Refer to Chapter 5) to integrate data pertinent to both the human and natural environments would enable managers to decide what action was necessary to reach predetermined goals based upon all the evidence currently available to them.

The following discussion is important to show how tourism patterns as a whole have changed with regard to different destinations within Asia. This will form a basis for later work focused upon the changing tourism demand for Mongolia itself.

1.3: Asia Tourism

During the last two years, many Asian countries (Figure 1.3) have become strong tourist destinations through rapid changes in the global political and cultural climate. Table 1.1 shows that East Asian Pacific (EAP) countries have had a 111 percent increase in visitor arrivals over the seven year period from 1986 to 1993, and a 216 percent increase in tourist receipts. Figure 1.2 demonstrates the average annual increase in tourist arrivals for EAP countries compared with other regions of the world: EAP rate is nearly double the world average.



(Virtual Tourist, 1996)

FIGURE 1.3: Map of Asia

This section will explore the factors surrounding the generation of these tourists, motivations for travel to this region, and infrastructure issues dealing with the future support of these visitors. Many EAP countries, including China and Taiwan have experienced recent rapid economic growth and urbanisation of their populations (refer to discussion on urbanisation in Mongolia, Section 1.4.2). It is expected that Asia will contribute up to 60 percent of world population growth over the period 1950 -2000 (Todaro, 1989). Mongolia is discussed in the context of the East Asia Pacific region, since in general, information about countries within this region is more accessible and up-to-date than information about countries of the former Soviet republic (which might illustrate closer tourism trends). Moreover, Mongolia is economically and politically allied within the EAP region and intra-regional travel would be an important contribution to total arrivals.

The so called 'Tiger States' including Hong Kong, Taiwan and Singapore have demonstrated an especially strong economic growth pattern (Perry Hobson, 1994), producing an economically mobile population, able to take advantage of better transport facilities and the removal of travel restrictions. Waters (1994:6) points out the close relationship between economic growth and tourism growth and suggests that;

> "a glance at the economic conditions in the various regions of the world in 1994 provides a fairly accurate clue as to how the travel industry was faring."

Traditionally, tourism has focused on long-haul travel from North America and Europe, but the easing of travel restrictions in many Asian countries has highlighted the boom in intraregional travel. Japan raised its visa restrictions in

1964, and reduced its foreign currency allowances. Taiwan lifted visa restrictions in 1987, followed by South Korea in 1989 (Mak & White, 1992). Similarly, travel to Mongolia has become significantly easier since the fall of the socialist government in 1990.

This 'opening up' of the area has been followed by an increase in air traffic to, and within the region. The International Agents of Tourism Association (IATA) (Perry Hobson, 1994) report that traffic on Asia-Pacific routes reached 87 million passengers in 1990. It is forecasted that this will increase to 189 million by the year 2000 if current trends continue. Overall this means that there is expected to be a significant increase in tourism demand within the region, and therefore investment in the provision of services to tourists will also increase.

In 1967, 56 percent of all international tourists arriving in EAP countries were interregional travellers, and thus 44 percent intraregional travellers. By the 1970's this had reversed (WTO, 1980) and by 1992, the percentage of intraregional travellers had increased to 73 percent (Perry Hobson, 1994). The Visa Travel Thinktank stated;

> "The market for Asia is Asia itself. It will come from China, India, Indonesia and Japan and the ASEAN countries."

Table 1.2 demonstrates the importance of travellers generated within the EAP region. Following this trend, it can be assumed likely that the greatest market for Mongolian tourism will come from within Asia itself.

Country	% Arriving from[b] Asia-Pacific[a] Countries, 1989	% Departing to[c] Asia-Pacific Countries, 1988
Japan	58.94	49.3
Hong Kong	70.15	77.9
Taiwan	77.67	85.8
China	-	-
Korea	78.84	65.1
Singapore	71.92	88.4
Thailand	66.48	-
Malaysia	66.24	-
Philippines	52.48	65.5
Indonesia	69.25	-
Australia	57.35	59.7
New Zealand	59.84	80.7

(Mak & White, 1992)

[a]Asia-Pacific includes North East, South and South East Asia, Australia, New Zealand, South and Central Pacific, Hawaii and Canada. The determination of intraregional versus interregional travel are in some cases based on first or last country visited and may understate the relative importance of outbound interregional travel.

[b]Pacific Asia Travel Association, Annual Statistical Report, 1989

[c]The Economist Intelligence Unit, Far East and Pacific Travel in the 1990s, pp. 35-36

TABLE 1.2: Percentage of Visitors from Major Asia-Pacific Countries[a]

Within the EAP region, North East Asia has experienced the highest annual growth rate for tourist arrivals at 10 percent, from 10 million in 1980, to 32 million in 1992. Arrivals were disrupted in 1989, as a consequence of the Tianneman Square incident. China alone experienced a 23 percent decrease, while Korea experienced one of the fastest rates of growth since 1984, a by-product of its hosting the 1988 Olympics. By comparison, South East Asia and Oceania both experienced an 8 percent annual growth over the same period (WTO, 1993). Table 1.3 illustrates the continuing growth in tourism in the Asia-Pacific region across 1993 and 1994. As yet, more recent figures which might illustrate the effect of the changing economic climate in the Asia-Pacific regions aren't available.

The recent economic crisis in Pacific Asia is addressed by Choy (1998) who makes the point that although this crisis is likely to decrease the number of arrivals (through the decrease in intra-regional travel), this may not feature as a long-term negative impact, since it lessens growth in the region. In many Pacific Asian areas, hotel overcapacity is a problem: a decrease in the building rate would be advantageous to the industry as a whole.

Edwards (1990) suggests that 66 percent of international arrivals to EAP countries stay in main cities, and 25 percent stay at beach resorts, while the remaining 9 percent make wider visits around the country. Travel to Hong Kong and Singapore is entirely city based. Mak & White, (1992) make the point that city tourism is characterised by a shorter average length of stay, but higher daily expenditures, owing to shopping opportunities. Sex tourism is another feature of city tourism, a feature also of Ulaanbaatar where prostitutes are found in many of the city's hotels. Mongolia has no beach resorts, but a number of lakes in the country are considered popular holiday destinations by domestic tourists.

Several factors are suggested by Edwards (1990) for the character of tourism in the EAP region: firstly, economic growth has led to greater amounts of disposable income; secondly there have been changes in the costs of travel; competition and deregulation have helped to deflate prices, offsetting the high inflation rates in some countries (Refer to later discussion of Mongolia, Table 1.8). More importantly for the future, the capacity of destinations has been called into question, with limitations on airports and hotels posing the greatest restrictions.

Besides infrastructural capacity, there are also human resource issues to be considered - including the availability of skilled and trained labour in a region, and its relative cost. Batjargal (1995) makes the point that most countries have labour availability in quantitative terms, but availability in qualitative terms is open to argument. He was enthusiastic about the amount of hotel construction in Ulaanbaatar, but was concerned that levels of service were not up to the expectations of some Western tourists.

A rapidly declining birthrate in newly industrialised countries (NIC) such as Hong Kong and Singapore will lead to a shortage of young workers to support industrial development, including tourism (Perry Hobson, 1994). Labour costs will increase, in comparison with China and Mongolia (Table 1.5) which have a higher rate of population increase.

To address current business opportunities, Asian countries are actively recruiting and building business programmes. To this end, the Economic College of Mongolia is actively seeking European partners for European Union (EU) funding in creating business schools and developing training courses, which will include tourism (Batjargal, 1995).

Some Asian countries are experiencing environmental degradation caused by rapid industrialisation from exploitation of natural resources with no clear planning or understanding of social or environmental impacts. Negative impacts such as mining, evidence of tree felling, effluents from industrial development and the construction of tourist facilities close to cultural attractions (Perry Hobson, 1994) may deter potential tourists. Ratnapala (1992:6) suggests:

> "Emerging trends show an active tourist, a demanding tourist. A prototype of the future tourist is a "greenie", one who is conscious of the environment."

Asian Visitor Arrivals - 1993/94					
	Country	**Arrivals**	**% change**	**Arrivals '94**	**% change**
		(/000)	**1993/92**	**(/000)**	**1994/93**
South Asia	Afghanistan	6	0	x	x
	Bangladesh	125	15	140	10
	Bhutan	3	0	x	x
	India	1,765	-5	1,560	8
	Iran	205	11	x	x
	Maldives	241	2	x	x
	Myanmar	18	-14	x	x
	Nepal	282	-16	326	11
	Pakistan	364	3	441	16
	Sri Lanka	450	14	407	4
Southeast Asia	Brunei	580	18	x	x
	Cambodia	90	2	176	49
	Indonesia	3,400	11	4,006	18
	Lao P. Dem. Rep	25	0	x	x
	Malaysia	6,800	13	2,753	10
	Philippines	1,400	34	1,573	15
	Singapore	5,848	7	6,898	7
	Thailand	5,174	11	6,116	7
	Vietnam	200	11	941	56
Northeast Asia	China	19,452	18	5,182	11
	Hong Kong	7,898	13	9,331	4
	Japan	2,100	-0.1	3,469	2
	Korea, Rep.	3,331	3	3,580	7
	Macau	3,888	22	1,745	6
	Mongolia	150	9	151	x
	Taiwan	1,850	-1	2,127	15

(Waters, 1994, 1996 and United Nations, 1997)

TABLE 1.3 : Breakdown of Asian Visitor Arrivals

It is suggested that Mongolia's growth in popularity (Table 1.3) over the last five years has been due in part to the growing trend for travel to more remote destinations, but depends, in the main, upon the political changes that have taken place across many Asian countries, opening them to the world (Perry Hobson, 1994). The growth of a market economy since 1990 in Mongolia has been responsible for the promotion of the region as a potential tourist destination (Middleton, 1993). 1995 was the first year that Mongolia exhibited at the World Travel Market in London under the banner of the Mongolian Ministry of Trade and Industry, highlighting its commitment to tourism.

1.4: Tourism in Mongolia

1.4.1: Introduction

The recent change in the political structure of Mongolia from a subsidised socialist economy to a free market, has effectively restricted the Russian borders (Figure 1.4) to trade - previously the major trading route - and a thriving black market economy is now supported across the Chinese border, exploiting the trans-Siberian rail link between the capital Ulaanbaatar and Beijing. Restrictions on this trade are not strongly enforced and it is the main source of the Western goods currently on sale in Ulaanbaatar (Boldbaatar, 1995). Border restrictions with Russia are gradually being relaxed after assets and trading partnerships are being resolved.

FIGURE 1.4 : Map of Mongolia

- Mongolia is defined by the boundaries

Northern	52°09' - 98°57'
Southern	41°35' - 105°00'
Eastern	48°53' - 87°44'
Western	46°43' - 119°56'

(State Statistical Office, 1992)

Mongolia is landlocked, sharing 3485 km of its 8161 km border with Russia, and 4676 km with China (CIA, 1995). It is one of the highest countries in the world, situated on a plateau, with an average altitude of 1,200m. This altitude, in conjunction with its continental climate, make Ulaanbaatar the coldest capital in the world. The mean temperature is below 0°C for over six months of the year (Storey, 1993)

Mongolia is dominated by meadows and pastures, accounting for 79 percent of total landuse. Arable land accounts for only one percent of the total land area (CIA, 1995). Table 1.4 lists the main administrative districts (*aimags*) in Mongolia which are illustrated in Figure1.5.

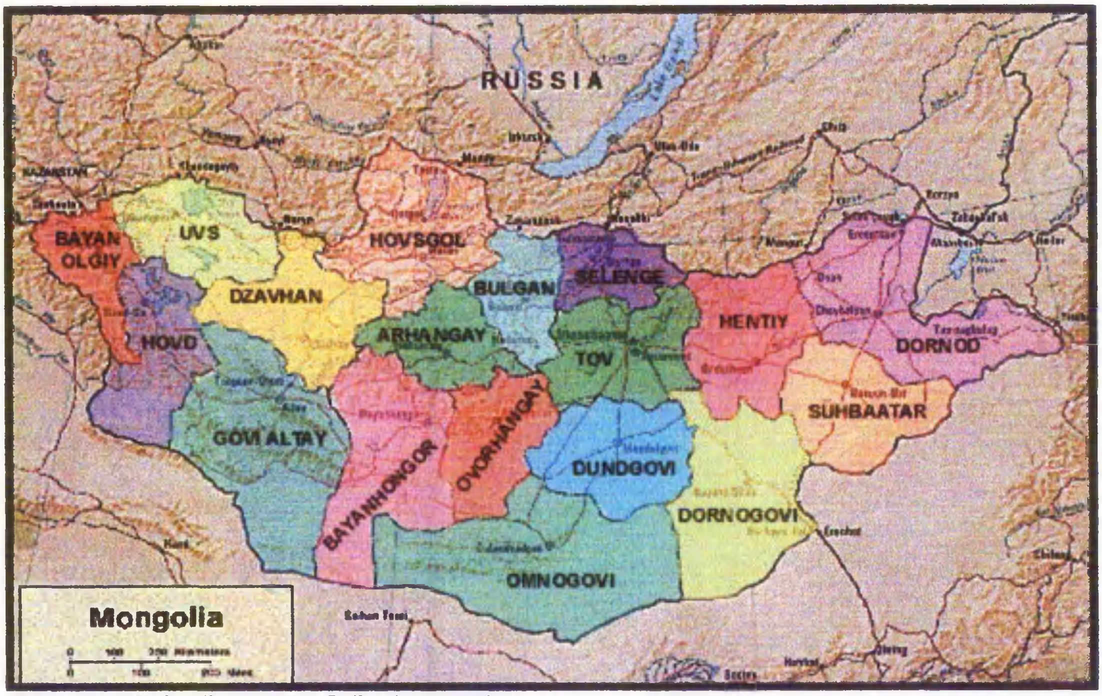
Aimag[3]	Year of Foundation	Territory (/000 km^2)	No. of *sum*[4]	Administrative Centre
Aimag				
Arhangai	1923	55	17	Tsetserleg
Bayanhongor	1941	116	19	Bayanhongor
Bayan Ölgii	1940	46	12	Ölgii
Bulgan	1937	49	15	Bulgan
Dornod	1931	124	14	Choibalsan
Dornogov'	1931	111	13	Sainshand
Dundgov'	1941	78	15	Mandalgov'
Gov'altai	1931	142	17	Altai
Hentii	1923	82	19	Öndörhaan
Hovd	1931	76	16	Hovd
Khövsgöl	1931	101	20	Mörön
Ömnögov'	1931	165	14	Dalanzadgad
Övörhangai	1931	63	18	Arvaiheer
Selenge	1931	43	16	Sühbaatar
Sühbaatar	1941	82	12	Baruun Urt
Töv	1923	81	26	Zuun Mod
Uvs	1931	69	19	Ulaangom
Zavhan	1923	82	23	Uliastai
Autonomous Municipalities				
Darhan	1962	0.2	4 [2]	
Erdenet	1976	0.1	4 [2]	
Ulaanbaatar	1639	2.1	9 [1]	

Notes:- [1] Number of districts = 5
[2] Number of *horoo*[5] = 10

(Academy of Sciences, 1990)

TABLE 1.4: Administrative and Territorial Divisions of the MPR (as of 1 Jan 1988)

[3] *Aimag* : an administrative district synonymous with 'county' or 'state', which has its own governor and funding regulations.
[4] *Sum* : an administrative district within an *aimag*.
[5] *Horoo*: administrative district within a town



(Perry-Castañeda Library Map Collection, 1997)

FIGURE 1.5: Map of Mongolia showing Aimag Boundaries

Electricity is generated in thermal power stations burning domestically mined coal with some imported fuel oil. About 11 percent is generated by diesel generators. Mongolia still imports electricity from the former Soviet Union at peak times, due to an inability to respond quickly enough to demand. About a quarter of the population - mainly in rural areas, remains without electricity. Two hydro power stations sites, 200-400 kW have been identified, one on the Delger River, south east of Mörön (Figure 1.5 Hovsgol (Khövsgöl) *aimag*), and the second on the tributary of the river Uur, west of Hatgal. Both settlements are currently supplied by diesel (Academy of Sciences, 1990 and Togtokhnyam, 1995)

There is potential for investment in Mongolia's mineral wealth (already provided for in the foreign investment law, Section 1.4.4). Extensive deposits of phosphates are known to occur in the Upper Cambrian sediments at Urundish mountain

(Khövsgöl *aimag*). Three deposits were drilled in the 1980's outlining 400 million tonnes of open pit rock containing about 20 percent P^{205}, but total reserve was estimated to be more than 2 billion tonnes. A joint Soviet venture was outlined in 1986, to include mines, a concentrating plant and new rail spur to the Trans-Mongolian line, but this failed to get underway because of concerns over the impact of mining in the area (Section 1.6).

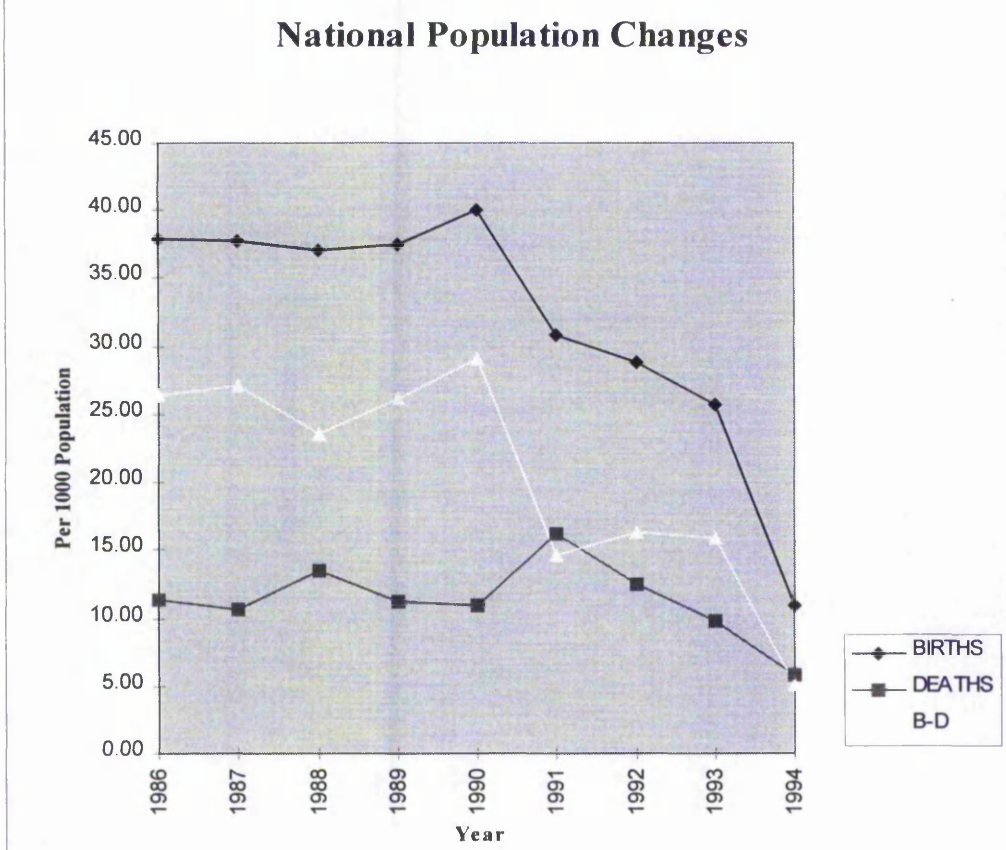
1.4.2: Demography

Mongolia's population was estimated at July 1993 to be 2,367,054 (CIA, 1995), based on figures produced by the State Statistical Office. This equates to about 1.3 people per km^2 of territory. The most populated areas are the river valleys of the forest-steppe regions, and the least populated are mountain taiga, and semi-desert zones (Academy of Sciences MPR, 1990). Current figures are unavailable for most economic and demographic trends. The population growth rate of 2.62 percent is high as a result of cultural and political influences. Mongolian families feel it is very important to produce children as they are a source of help and support in later life (Chimgay, 1995). In addition, the Mongolian government is following a policy that encourages the growth of families, as the threat from China is perceived to diminish if Mongolia has a larger population (Wingard, 1995). Clearly this is a misconception, but suggests that the people of Mongolia feel marginalised.

In the period from 1940 - 1960 the annual population growth rates were around 1 percent, whereas by 1961 - 1980 the birth coefficient stood at 32.2 - 43.2 per thousand and mortality had been reduced by more than twice that during 1940-

1980. However, from Figure 1.6 it can be seen that this growth rate has significantly reduced from values in the mid 1980's. The comparison of the birth rate (33.41 per thousand in 1993) and the death rate (7.16 per thousand in 1993), highlights the high proportion of the population in the lower age groups (CIA, 1995 and Randall, 1993).

Although the death rate has remained virtually constant during the last ten years, the birth rate has fallen to 12 per thousand in 1994 (Figure 1.6). This may be linked to the continued urbanisation around industrial centres such as Erdenet and Darhan (Table 1.5). The current death rate in Mongolia is lower than the global average. Life expectancy at birth is very high, 63.5 for males, and 68.1 for females, and the fertility rate is an average of 4.41 children per woman of childbearing age (CIA, 1995).



(Enkhtuyaa, 1995)

FIGURE 1.6: National Population Changes (1986-1994)

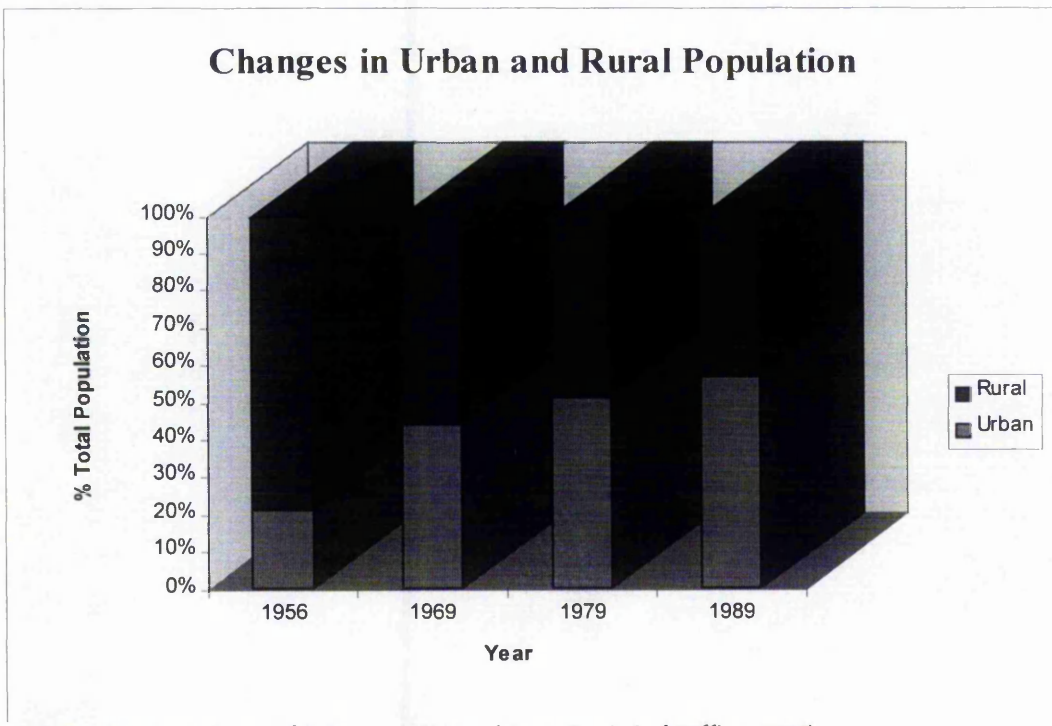
The Academy of Sciences (1990) documents three stages of development in the recent history of Mongolia. The first stage occurred between 1918 and 1940 and was characterised by an insufficient 0.5-0.79 percent annual increase in population with a low birth rate and comparatively high death rate. Stage two occurred between 1940 and 1960 and was characterised by a decrease in the mortality rate (due to better technology and better medical facilities), and a relative increase in the birth rate. The growth rate stood at 1.5 - 1.8 percent. The third stage occurred between 1960 and 1980, where the death rate continued to decrease, while the birth rate increased, producing a growth rate reaching 3 percent.

Year	*Total Population (thousands)*	*Urban Population (thousands)*	*Rural Population (thousands)*	*Urban (% total)*	*Rural (% total)*
1956	845.5	183.0	662.5	21.6	78.4
1969	1197.6	527.4	670.2	44.0	56.0
1979	1595.0	817.0	778.8	51.2	48.9
1989	2043.4	1166.1	877.9	57.1	42.9

(Modified from Academy of Sciences, 1990 and State Statistical Office, 1992)

TABLE 1.5: Dynamism of Population Growth

Table 1.5 shows how the population has become more urbanised between 1956 and 1989. The effect of socialist rule was to enforce collectivisation of livestock into state farms, which in turn required that some of the nomad population be settled (Jagchid & Hyer, 1979). Many people have also migrated to industrial centres such as the Erdenet mining centre (Academy of Sciences, 1990). Figure 1.7 illustrates this trend.



(Modified from Academy of Sciences, 1990 and State Statistical Office, 1992)

FIGURE 1.7: Changes in Mongolia's Urban and Rural Population

Although it is unclear what definition of 'urban' and 'rural' is being used here, the figures give a general trend of urbanisation up to 1989. At this time it is likely that Hatgal and Mörön in the Khövsgöl region would be counted as urban, due to their significance in Soviet-Mongolian trade. Hatgal was known as the 'Industrial centre of the North' (Chimgay, 1995).

	1980	1990
TOTAL	**511.2**	**648.7**
Material Production	*388.3*	*464.5*
Industry	81.6	123.4
Agriculture	202.7	189.4
Construction	30.7	44.6
Transport	32.3	48.0
Communication	4.2	7.0
Trade, Procurement and Material technical supply	35.0	49.2
Forestry	0.9	2.1
Other	0.9	0.8
Non-material production	*122.8*	*184.2*
Housing, Domestic service	14.3	28.9
Science	9.0	14.1
Public health, social insurance, physical culture	32.0	46.7
Culture, Education, Art	49.2	75.5
Finance, Credit, State insurance	1.6	3.1
Administration	11.5	10.9
Other	5.0	5.0

(Academy of Sciences, 1990)

TABLE 1.6: Number of employees in National Economy (annual average/thousands)

It is unclear, but assumed, that Table 1.6 defines agriculture to include pastoral activities. When the increase in population between 1980 and 1990 is taken into account, it is especially significant that the number of people employed in the agricultural industry has declined from 202,700 to 189,400. These statistics do not define tourism employment *per se*, but may be inferred from the "Culture, Education, Art" group which has experienced a rise of 53 percent over this ten year period.

1.4.3: Transport

Mongolia's primary barrier to economic expansion is likely to be the inadequate transport infrastructure for its 1.6 million sq. km area. *Aimags* are linked by single roads, generally unmarked and usually consisting of several intersecting tracks which meander across the terrain, sometimes 1 km apart (Corff, 1996). These make up one quarter of the total road length for the country. There is a total of 42,000 km of roads (equating to an average of 26m/sq. km), of which three percent are paved, and seven percent gravelled. (Middleton, 1993).

			Structure (%)		
	1960	1987	1960	1987	1988/1960
(a) Freight					
Freight turnover (million tonnes-kilometres)	3,259.9	8,292.3	100.0	100.0	2.6 times
Rail transport	3,036.3	6,179.9	93.1	74.5	2 times
Road transport	220.2	2,099.1	6.7	25.3	9.8 times
(b) Passengers					
Passenger conveyance	203.8	1,692.8	100.0	100.0	8.7 times
Rail transport	56.4	486.5	27.7	28.8	9.6 times
Road transport	124.1	838.6	60.9	49.5	7.4 times
Air transport	23.3	367.7	11.4	21.7	22.8 times

(Academy of Sciences, 1990)

TABLE 1.7: Freight turnover by Transport sector

Road transport accounts for 72 percent of freight tonnage, but only 31 percent of freight turnover (Table 1.7). This suggests that low-cost, heavy goods tend to be transported by road, whereas the lighter, high-cost goods are transported by other means (e.g. air). The rail network serves limited areas of the country and flying low-cost goods would prove economically prohibitive. Nearly 60 percent of all freight carried by road is construction materials and the poor conditions of roads has been estimated to raise transport costs by $100 million per year (Middleton, 1993). The road fleet is antiquated, inefficient or idle due to lack of spare parts and the expense or scarcity of fuel. One estimate suggests a 25 percent saving in fuel costs could be obtained by a modernised fleet - important where fuel has to be imported (Middleton, 1993).

Mongolia's rail network consists of 1,815 km track plus 200 km side track and shunt lines. The main route runs north to south through Ulaanbaatar and Darhan, the two largest cities and industrial centres; with two main branch lines, one to Erdenet, and second to Baga Nuur coalfield. Another joins the eastern city of Choybalsan to the Russian rail network. This link was run as a joint venture with the USSR and continues with the Russian federation (Middleton, 1993).

The rail network carries 28 percent of all freight (Table 1.7) and virtually all international cargo, and accounts for 69 percent of freight turnover. Much of the black market trade with China is routed through this line (Boldbaatar, 1995).

However, there is a shortage of energy and locomotives and a sub-optimal mix of rail cars. Steam traction was fully replaced by diesel in 1961 (Academy of Sciences, 1990). Most domestic cargo is coal - mainly for power stations. The gauge is the same as that of the former USSR, but is narrower than that of China. This will be an important constraint to Mongolia's future ability to transport freight internationally, since the route through China is the shortest land route to the sea. Wheels are changed beneath passenger trains at the Mongolian border, an operation taking a few hours (Lonely Planet, 1996). Freight has to be reloaded manually, which may take from two weeks to two months per train, depending on the priority of the cargo. (Middleton, 1993).

Mongolia has an extensive domestic air network, linking the 21 *aimags*, and 160 other smaller centres. However, very little freight is moved by air, and the standard of runways has become dilapidated in recent years (Figure 1.8).

Total:	81
Useable:	31
Paved runways:	11
Runways over 3,659m	<5
Runways 2,440 - 3,659m	<20
Runways 1,220 - 2,439m	12

(CIA, 1995)

FIGURE 1.8: State of Mongolian Airports

Very little freight is moved by air, about 4,000 tonnes in 1991, most of which was mail. However, the air service is important for passenger transport although this has declined in recent years, due to the condition of the aircraft. 830,000 passengers were transported in 1990, whereas 610,000 passengers were transported in 1991 (Middleton, 1993). The domestic market is serviced by MIAT (Mongolian Civil Air Transport) which owns 45 12-seater aircraft and 16 50-seater aircraft. Most are at least 15 years old. Ulaanbaatar is serviced internationally by MIAT, Aeroflot and the Chinese airline CAAC. Regular flights are scheduled to Moscow, Irkutsk and Beijing (Enkhsaikhan, 1995).

There are two steamship lines in Mongolia, one on Lake Khövsgöl and the other on the Selenge river; the total length of navigable waterways totalling only 400km (limiting tourism to this kind of attraction). The Khövsgöl line handled mainly import and export consumer goods, building materials, oil products and agricultural produce before 1990 (Academy of Sciences, 1990), but as the Russian borders have now been effectively closed in this region, the ship runs as a ferry service dependent upon fuel availability (Togtokhnyam, 1995). A further discussion of transport in Khövsgöl can be found in section 1.5.4.

1.4.4: Economy

The monetary unit for Mongolia is the Tugrik (Tg). Table 1.8 shows the exchange rate of the tugrik against the US$ over five years. Inflation in Mongolia has been quoted at over 340 percent at times (State Statistical Office, 1992). The CIA quote figures of 325 percent inflation for 1992 (CIA, 1995)

1991	424
1992	398
1993	400
1994	399
1995	460

(Hart, 1994)

TABLE 1.8: Exchange rates Tg : US$1

Rates of exchange alter on a daily basis and support a black market which offers better rates of exchange than banks. From the experience of the researcher during

1995 and 1996, it seems that this unofficial trade in currency is easily available to foreign tourists and there is little attempt to prevent or control it. Economic instability has also led to a 'dual economy' whereby US$ are accepted in place of tugriks in many outlets in Ulaanbaatar, and some retailers only take US$ (Surenguin, 1995). Although this is not a 'new' phenomenon, it has been extended outside the 'dollar shops' to entertainment facilities - some of which take only dollars although they have no entrance restrictions on nationality. Table 1.9 shows how the prices of consumer products have varied over a period of sixteen months during 1991 and 1992.

National Consumer Price Index			
	16-Jan-91	31-Dec-91	01-Jun-92
Food beverages and tobacco	100.0	131.0	342.5
Of which:			
Meat and meat products	100.0	124.6	280.8
Dairy products	100.0	156.3	511.7
Grain and grain products	100.0	124.0	235.6
Potatoes	100.0	100.0	450.0
Chocolate	100.0	114.6	170.8
Sugar	100.0	100.0	975.0
Vodka	100.0	100.0	100.0
Clothing and fabrics	100.0	148.4	436.0
Men's suits and coats	100.0	174.5	321.9
Women's suits and dress	100.0	229.3	236.0
Men's and women's garments	100.0	173.5	318.7
Children's clothing	100.0	100.0	368.6
Shoes and boots	100.0	236.1	456.3
Rent and utilities	100.0	115.5	148.0
Household goods'	100.0	209.6	586.1
Medical care	100.0	100.0	196.7
Transport and communications	100.0	137.3	218.5
Education and recreation	100.0	277.3	561.5
Other goods and services	100.0	152.3	341.7
Overall Index	**100.0**	**152.7**	**340.1**

(State Statistical Office, 1992)

TABLE 1.9: National Consumer Price Index

Table 1.10 demonstrates that though Mongolian statistics are precise (although not necessarily accurate), it is difficult to determine standard socio-economic indicators, as Gross Social Product is not defined in the context of Gross Domestic Product (GDP). The researcher was hesitant to translate this data in order that it be comparable to table 1.9. Even assuming that the relationship of Gross Social Product to Gross Domestic Product could be satisfactorily determined, then it would be of questionable application, since the 'official' exchange rate of the *tugrik* at that time far exceeded its value on the black market. Sneath (1998) suggests that during the late 1980's, the tugrik was officially valued at around 1Tg :1US$. The CIA (1995) give a figure of $1.8billion (1992).

	1980	1990
Fixed prices of 1986, billion tugriks		
Gross social product	10.90	17.75
Gross industrial output	4.35	8.77
Gross agricultural product	1.75	2.55
Produced national income	4.94	8.15
Billions		
Freight turnover (all types transport) ton km	4.99	6.87
Passenger turnover (all types transport) passenger km	1.01	2.01
Produced national income per capita (tugrik)	3.10	5.90

(State Statistical Office, 1992)

TABLE 1.10: Basic Indicators of Socio-Economic Development

Foreign aid is currently standing at over US$300 million in trade credits. This includes US$7.4 million supplied by the United Nations Development Programme (UNDP) (1990), US$170 million in grants and technical assistance from Western Donor countries (1991) including US$30 million from World Bank and US$30 million from the International Monetary Fund (IMF) (CIA, 1995 and Mongolian Chamber of Commerce, 1995). Thus, aid represented a significant part of the economy in 1995. Most foreigners in Ulaanbaatar were US economists advising on the restructuring of the banking and financial industries. Additionally, European initiatives such as the TACIS project are collaborating with Mongolia to draw up management plans for tourism development (TACIS, 1997).

Mongolia's external debt is estimated to be somewhere in the region of US$16.8 billion (1990) 98.6 percent of which is with the former Soviet Union (CIA, 1995). In order to raise foreign revenue, the Ministry of Trade and Industry has passed a foreign investment law (Ministry of Trade and Industry, 1990) offering tax incentives to foreign companies. It allows foreign investors full repatriation of profits and tax incentives for import and export over a period of ten years (Middleton, 1993).

The Mongolian Government is looking for other potential sources of foreign currency, including exploiting its oil reserves, exporting cashmere and leather and taking advantage of the tourism market. Tourism is widely regarded as an economic stimulant that can aid Mongolia in gaining international funds and recognition. To this end, the Mongolian government is encouraging what it terms 'ecotourism' in each of its thirteen 'state reserves'.

A major fraction of this influx is due to the growth in investment potential in Mongolia (Middleton, 1993). Foreign businesses are establishing their presence, bringing with them large amounts of expendable currency which is encouraging prices to rise to meet demand for Western goods.

Article 3 of the Foreign Investment Law (Appendix L) details that priority shall be given to foreign investments in "development of economic infrastructure" and "development of international tourist industry and all corresponding services" (Ministry of Trade and Industry, 1990). However, Annex 2 of the Foreign Investment Law outlines the major purposes of foreign investment as

> "solution of the following tasks using advanced techniques and technology: enhanced processing of natural and mineral resources and raw materials of agricultural origin and production of finished articles."

and also;

> "development of tourist industry and sanatoriums for local and foreign tourists, and the extension of all corresponding services".

This brings both mineral extraction and tourism into strong positions - both having equal importance in the view of the law.

Legislation concerning tourism is currently shared by the Ministries of Trade and Industry (MTI), and Nature and Environment (MNE). The 1990 Foreign Investment Law (Middleton, 1993) defines tourism specifically as a form of foreign investment to be encouraged. Within the same annex, mining is also designated a preferred form of foreign investment.

This raises direct conflicts between the MNE (National Parks Service) and the MTI (Mining). Although the MNE gives Khövsgöl the title of National Park, authority has been given for the commencement of phosphite mining (refer to mining discussion p.15) at Urundish Mountain. In addition, Article 9 of the foreign investment law makes provision for foreign investors to

> "pay fees for the use of land, forest, water and other natural resources. They shall guarantee the environmental protection in conducting their activities".

How this should be regulated is not specified, and is clearly an area of legal imprecision, particularly when mining would obviously change some aspects of the landscape.

There is inadequate legislation aimed at resolving these conflicts both at the national and local level, and in the absence of this, it is likely that the solution which generates the greatest amount of revenue for the expanding Mongolian economy will prevail. Both the MNE and MTI have responsibility for tourism, but their roles are not clearly defined or integrated. This is one of the most important management issues that Khövsgöl faces, as control of the landscape - although the responsibility of the MNE – is, in practice, control in name only. Economic issues ultimately hold the final ruling. For certain industries then, the National Park status might be deemed to be irrelevant.

1.4.5: Tourist Infrastructure

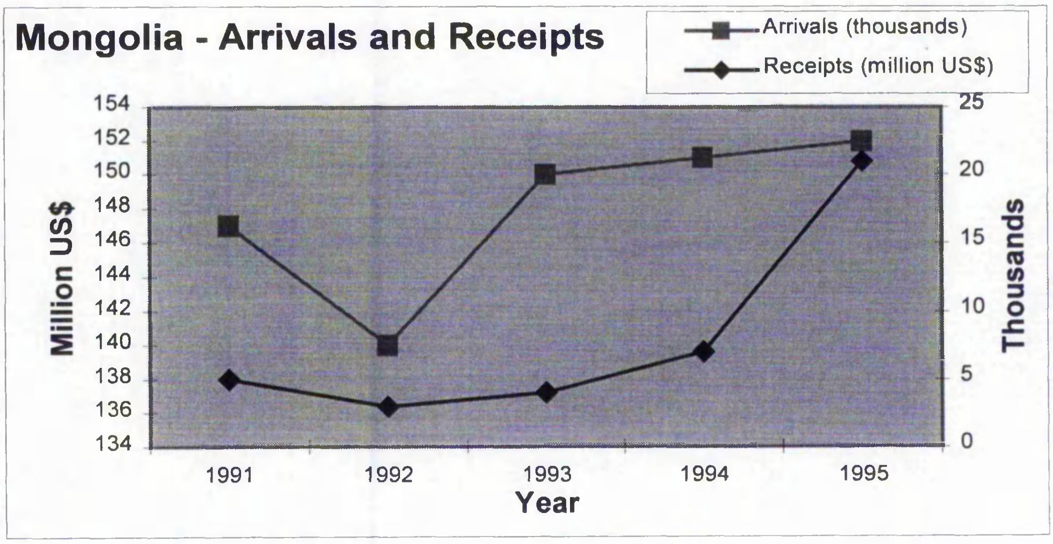
1990 is the most recent year available for tourist arrivals data to Mongolia. More recent data from Waters (1994) (Table 1.3) suggests arrivals have increased to 150,000 by 1993. This drop in arrivals from 1986 is accounted for by the change in political structure of Mongolia, and the restriction of links and trade with the former Soviet Union that accounted for the major part of arrivals (Table 1.11). Additionally, calculation of tourist arrivals also accounts for visitors in transit.

Mongolia Arrivals 1986-1990			
Country	1986	1988	1990
Bulgaria	0.7	1	0.8
Vietnam	0.1	0.1	0.1
GDR	2.4	2.3	-
USSR	186.7	221.2	124
Cuba	0.1	0.1	0.1
Poland	1.6	3.7	4.9
Romania	0.2	0.4	0.5
Hungary	1.4	1.6	1
Czechoslovakia	1.7	2.2	1.6
USA	0.7	0.7	0.8
Great Britain	0.5	0.8	0.7
Germany	0.3	0.9	1.2
Japan	0.4	0.5	1.7
Number of visitors (/000)	199.3	239.7	147.2

(Middleton, 1993)

TABLE 1.11: Origin of Arrivals to Mongolia (1986-1990)

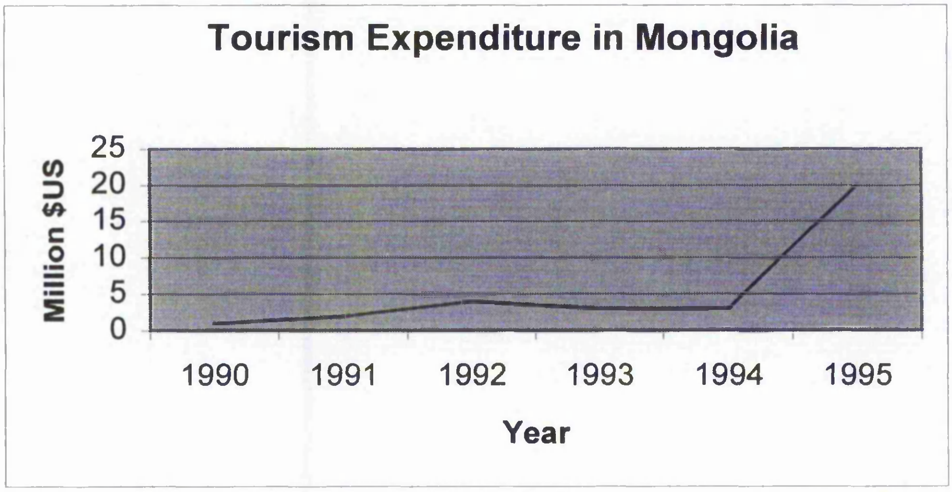
More recent information from the UN Statistics Yearbook (1997) illustrates changes in arrivals and receipts to Mongolia up to 1995 (Figure 1.9).



(United Nations, 1997)

FIGURE 1.9 : Mongolia – Arrivals and Receipts

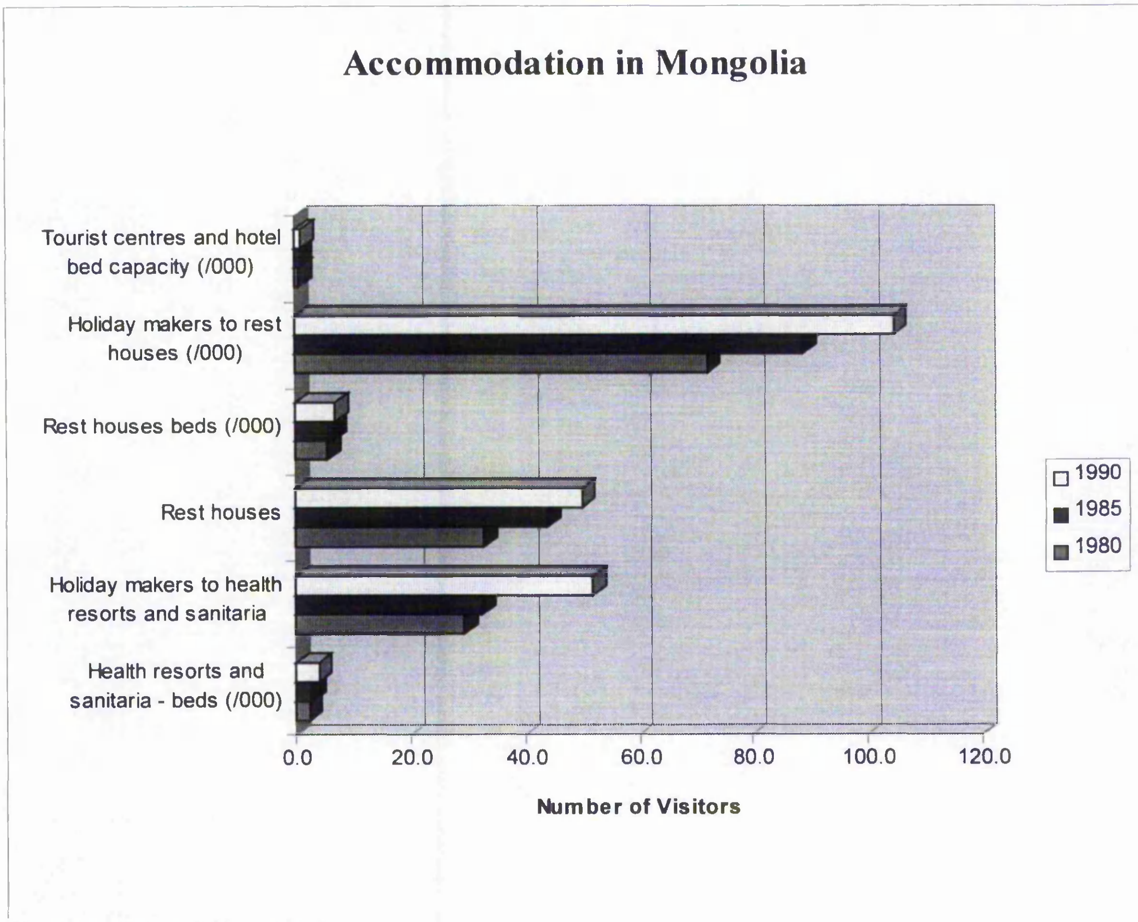
From a Mongolian perspective, there has been a drop in total tourist numbers since the transition to a market economy (Figure 1.9). For financial and political reasons, the number of domestic tourists and those from the Former Soviet republics dropped significantly after 1991. This coincided with the opening of the borders to international travel, previously only undertaken by a few journalists. Thus, the typology of visitors changed almost overnight. Since 1992, numbers of arrivals have climbed again and receipts increased significantly as the cost of services has been increased to match the changing nature of the visitors. Massive investment in tourism infrastructure such as hotel complexes has further increased Mongolia's capacity to generate income (Figure 1.10).



(UN Statistics Yearbook, 1997)

FIGURE 1.10 : Tourism Expenditure in Mongolia

Figure 1.11 demonstrates the steady increase in holiday makers and hotel capacity within Mongolia up to 1990, but there are no figures to indicate what proportion of this is linked to domestic tourism (domestic plus arrivals from the former USSR) and what proportion to international. Since 1990 there has been a decline in the numbers of domestic tourists and a substantial increase in the numbers of international visitors. This has changed working practices in terms of the types of accommodation available.



(State Statistical Office, 1992)

FIGURE 1.11: Changes in Accommodation in Mongolia

Juulchin was founded in 1954 as the state travel agency (Juulchin, 1996), under Mongolia's former socialist government. Since 1990, there are now more than 40 private travel agencies and numerous private hotels and tourist resorts have emerged (Echelberry, 1995). Additionally, this data was collected before political independence from Russia. Before this, very few foreign tourists were allowed into the country.

Juulchin provides tours that it claims:

> "were designed for travellers of all ages and tastes to enjoy in comfort" (Echelberry, 1995:1).

The main tours offered by Juulchin concentrate upon attractions based in and around Ulaanbaatar, whereas Nuht the second largest tour operator, manages a tourist resort outside Ulaanbaatar which caters for what it terms "ecological travel". Both companies provide tours to the major attractions in Mongolia outlined in Table 1.12.

Type	Attraction
Festivals	Naadam Tsagaan Sar
Ulaanbaatar	Mandshir Monastery Natural History Museum Bogd Khan Winter Palace Fine Arts Museum Gandan Monastery Nairamdal Park State Circus Opera and Ballet Theatre
Gobi	Bayan Gobi resort
Resorts	Khujirt Terelj Bayangobi Chingis Khuree Gurvan Nuur Khuduu Aral Undur Dov
Special Interest Tours	Khovd River Rafting Khövsgöl

(Echelberry, 1995).

TABLE 1.12: Main tourist Attractions in Mongolia

1: Mongolia

1. Hotel Bayangol, Ulaanbaatar
2. Bank "Mongol Daatgal" Ulaanbaatar
3. Tourist Resort "Bayan Gobi" South Gobi province
4. Tourist Resort "Tuvshin" South Gobi province
5. Tourist Resort "Dund Gobi" Middle Gobi province
6. Tourist Resort "Huduu Aral" Henty Province
7. Tourist Resort "Terelj Urguu" Ulaanbaatar
8. Shopping Centre "Juulchin" Ulaanbaatar
9. Train Ticket Office, Ulaanbaatar
10. Ulaanbaatar Central Stock Exchange, Ulaanbaatar
11. Tourist Resort "Amarbayasgalant" Selenge Province
12. Tour Agent "Han Borgotsoi" Co., Ltd, central Province
13. Tour Agent "Lake Hagyn Har" Co., Ltd, Central Province
14. Tour Agent "Tavan Bogd" Co., Ltd, Bayan-Ulgui Province
15. Tour Agent "Shilyn Bogd" Co., Ltd, Suhbaatar Province
16. Juulchin Taxi Service Co., Ltd, Ulaanbaatar

2: Overseas

1. Mongolian Tourism Corporation of America, Inc., New Jersey, U.S.A.
2. Mongol Juulchin Tours co., Ltd, Tokyo, Japan
3. Juulchin Europe Office, Berlin, Germany.

(Echelberry, 1995).

FIGURE 1.12: Juulchin's joint ventures and share holding subsidiaries

As the official state tourist company under socialism, Juulchin was in a very strong position after the withdrawal of communism in 1990. Figure 1.12 outlines some of Juulchin's interests showing both horizontal and vertical market integration.

1.4.6: Protected Areas

The traditional Mongolian tourist destinations include many Protected Areas. Table 1.13 outlines the thirteen Protected Areas currently defined in Mongolia

Name	*Area in km²*	*Comments*
Bogd Uul	40.8	Southern border of Ulaanbaatar. Habitat of 120 species of bird, 45 species of animals and more than 215 plant species, including 90 medicinal herbs.
Bulgan Uul	27.0	Forest-steppe of Arhangai *aimag* not far from the capital Tsetserleg.
Horgo Uul	56.0	Arhangai *aimag*. Extinct volcano displays a well-preserved cone-like shape and crater.
Bathaan Uul	60.0	Mountain reserve in Övörhangai *aimag*.
Lammergeya Gorge	6,100 ha	Gurvan Saihan mountains in the Gov'altai range in Ömnogöv *aimag*.
Bulgan Gol	3,080 ha	Protected section of the Bulgan river originating in the Mongolian Altai and flowing through the Trans-Altai Gobi. This area of Hovd *aimag* is known for its large beaver colonies.
Lhachinvandad Uul	32,600 ha	Mountain and adjacent steppes in the eastern steppe zone of the MPR, in Sühbaatar *aimag*. Habitat of the *maral* or northern deer
Nagalhaan Uul	500 ha	Mountain reserve in Töv *aimag*. 80 km south west of Ulaanbaatar.
Great Gobi Reserve	5.3 million ha	UNEP project. Third ranked in the world by area. Located in two separate sections in the Trans-Altai and Züüngaryn Gobi. Wild camel and Gobi bear, also Snow Leopard.
Khövsgöl		Mountain and lake habitat for musk deer, brown bear, argali and ibex. Khövsgöl *aimag*.
Hasagt Hairhan		Protected mountain ridge in steppe zone of Gov'altai *aimag*.
Extinct volcanoes	3.6	Bulgan *aimag* - includes the Uran Togoo (1.5km²), Tulga, Ih Togoo and Jalavch.
Höh Serhiin Nuruu		Mountain reserve in desert-steppe zone of Bayan Ölgiy *aimag* known for wild sheep population.

(Academy of Sciences, MPR, 1990)

TABLE 1.13: Current Protected Areas and Reserves in Mongolia

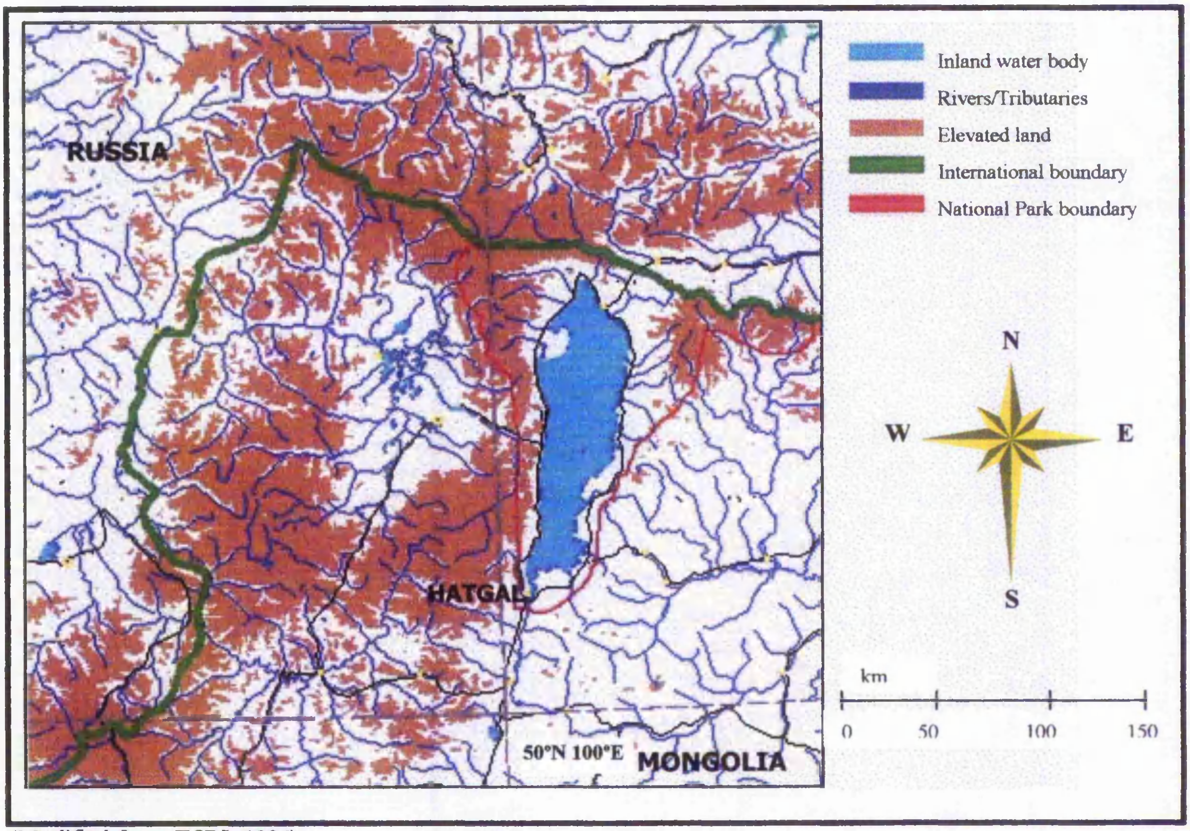
The largest reserve, Gobi National Park, has long been a mainstay of Mongolian tourism (Echelberry, 1995). Impacts on the desert region are mainly confined to the periphery of the Park since physical access is a barrier to penetration further into the desert (Wingard, 1995). Many tourists can view the Gobi from the Trans-Siberian railway on journeys between Ulaanbaatar and Beijing (refer to section 1.4.3). The Gobi is used as a tourist attraction even in the centre of Ulaanbaatar, as small kiosks selling "Gobi art" - usually generic watercolour landscapes - are stationed adjacent to the hotels.

Evidence of this increased interest in Mongolia is apparent within Ulaanbaatar. The Bayangol Hotel charges western prices for its rooms and the US Dollar is a valid form of currency in lieu of the Mongolian Tugrik. The western-style nightclubs located on the outer limits of the central business district take only Dollars. Many local women in each bar are prostitutes looking for foreigners, and children have begun to beg in the carparks of the larger hotels.

1.5: Khövsgöl National Park

1.5.1: Geography

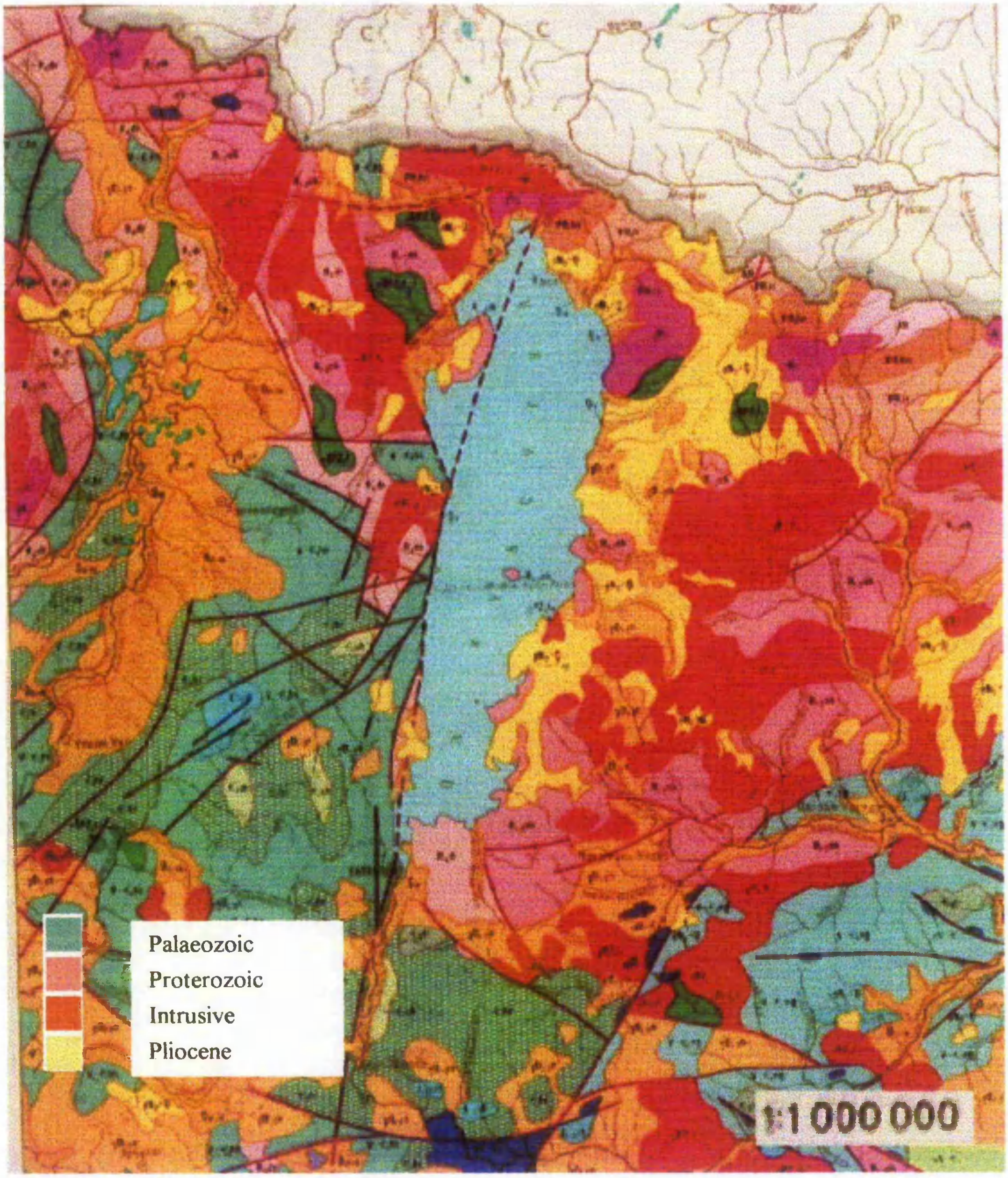
This research is concerned with the management of proposed tourism developments in one reserve (Table 1.13), the Khövsgöl National Park. This reserve is situated in Khövsgöl *aimag* (Table 1.4) in the north of Mongolia, close to the border with Russia. It serves to protect the Khövsgöl lake and surrounding mountain ranges which form the habitat of several endangered Mongolian mammals, including Musk deer (*Moschus moschiferus*), Brown bear (*Ursus arctos*), Ibex (*Capra sibirica*) and Argali (*Ovis ammon*) (State Committee CCCP *et. al.*, 1989). The area of interest, which includes 'Khövsgöl National Park' is defined by the longitude and latitude 49°53' - 52°00' North and 99°00' - 101°56' East which in total describes about 47,500km^2. (Figure 1.13).



(Modified from ESRI, 1996)

FIGURE 1.13: Khövsgöl National Park

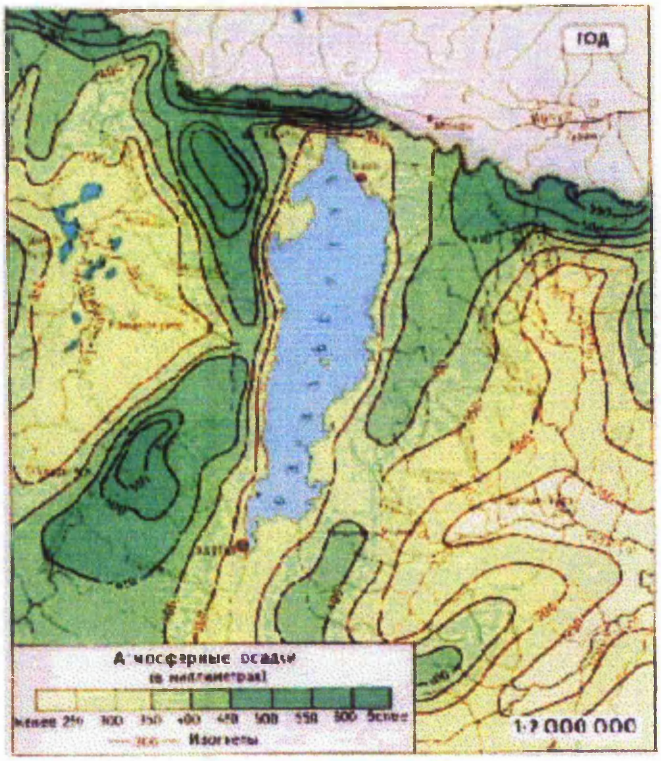
The underlying geology of the region (Figure 1.14) visited by the research team consisted of metamorphosed mudstones and shales dissected by igneous intrusions in the form of towers and pipes. An isolated area of phosphite deposits was located about 30km north of Hatgal at Urundish Mountain (Middleton, 1993), and supported a slightly modified vegetative composition. Lake Khövsgöl is situated at an altitude of 1730m and the surrounding peaks reach 3,000m or more (State Committee CCCP *et al.* 1989).



(State Committee CCCP *et. al.*, 1989)

FIGURE 1.14: Geology of Khövsgöl

Vegetation is dominated by sub-alpine and alpine perennials, interspersed with grassy marshlands adjacent to the lake, and where grazing has occurred. The growing season extends over two months, from mid-June until mid-August, when the rainy period of the year commences (State Committee CCCP *et al.* 1989).



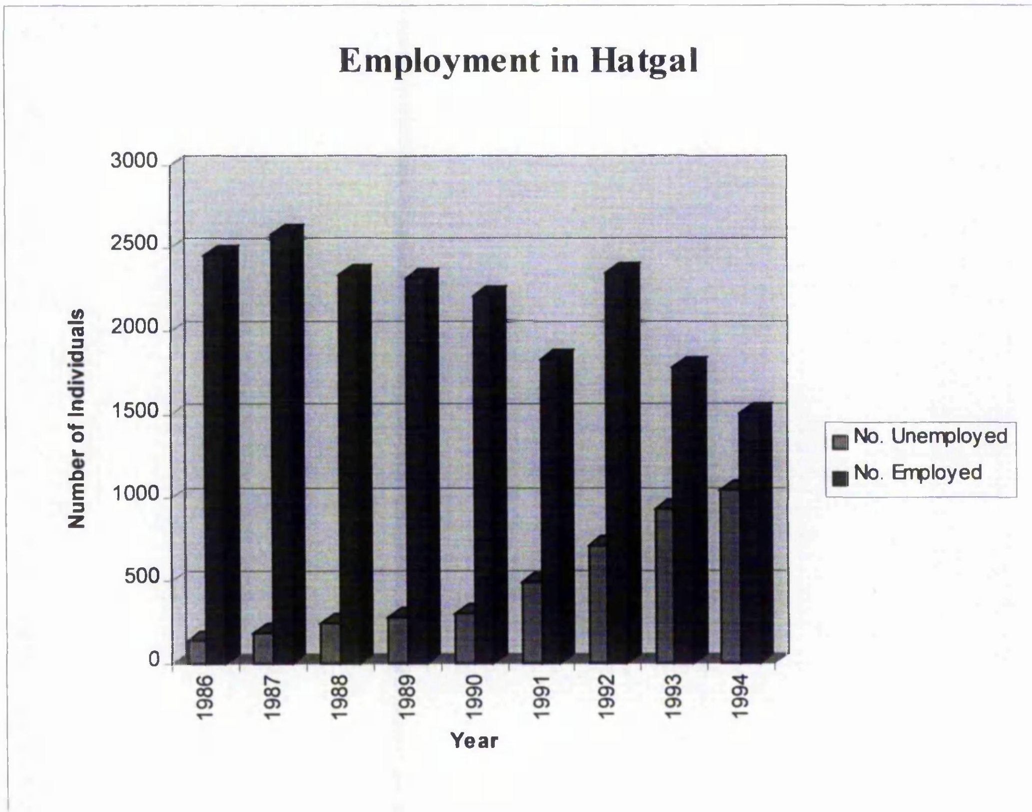
(State Committee CCCP *et. al.*, 1989)

FIGURE 1.15: Millimetres of Precipitation per Year

Khövsgöl is the rainiest province of Mongolia, receiving on average, 350mm of precipitation per year in the region covering the majority of the National Park (Figure 1.15). This figure can reach 550-600mm on some of the mountain ranges, falling mainly during the autumn rainy season. In January, the average temperature falls to -21°C across the majority of the National Park, causing the lake to freeze (State Committee CCCP *et al.*, 1989).

1.5.2: Demography

From research conducted in 1995 by the researcher, it can be concluded that local people are primarily engaged in nomadic pastoralism operating at slightly above subsistence level (Chapter 6). During the Russian occupation of the *aimag*, Hatgal, the main town, had a population of around 6000 people. Since the transition into a free market economy, Russian subsidies have ceased and many of the people have lost their jobs in Hatgal (Figure 1.16) and have migrated to the surrounding countryside, or looked for work in other towns such as Erdenet and Darhan (Togtokhnyam, 1995).



(Enkhtuyaa, 1995)

FIGURE 1.16: Employment in Hatgal, 1986-1994

Table 1.14 gives the 1994 figures for population within the towns of Hatgal and Hankh, which illustrates this decline.

Hatgal ***Sum***[6]

Total Population:	3,750 people
	1,815 male
	1,936 female
	934 families/*gers*
(1993 total)	*4405*
(1992 total)	*5200*
(1990 total)	*6000+*

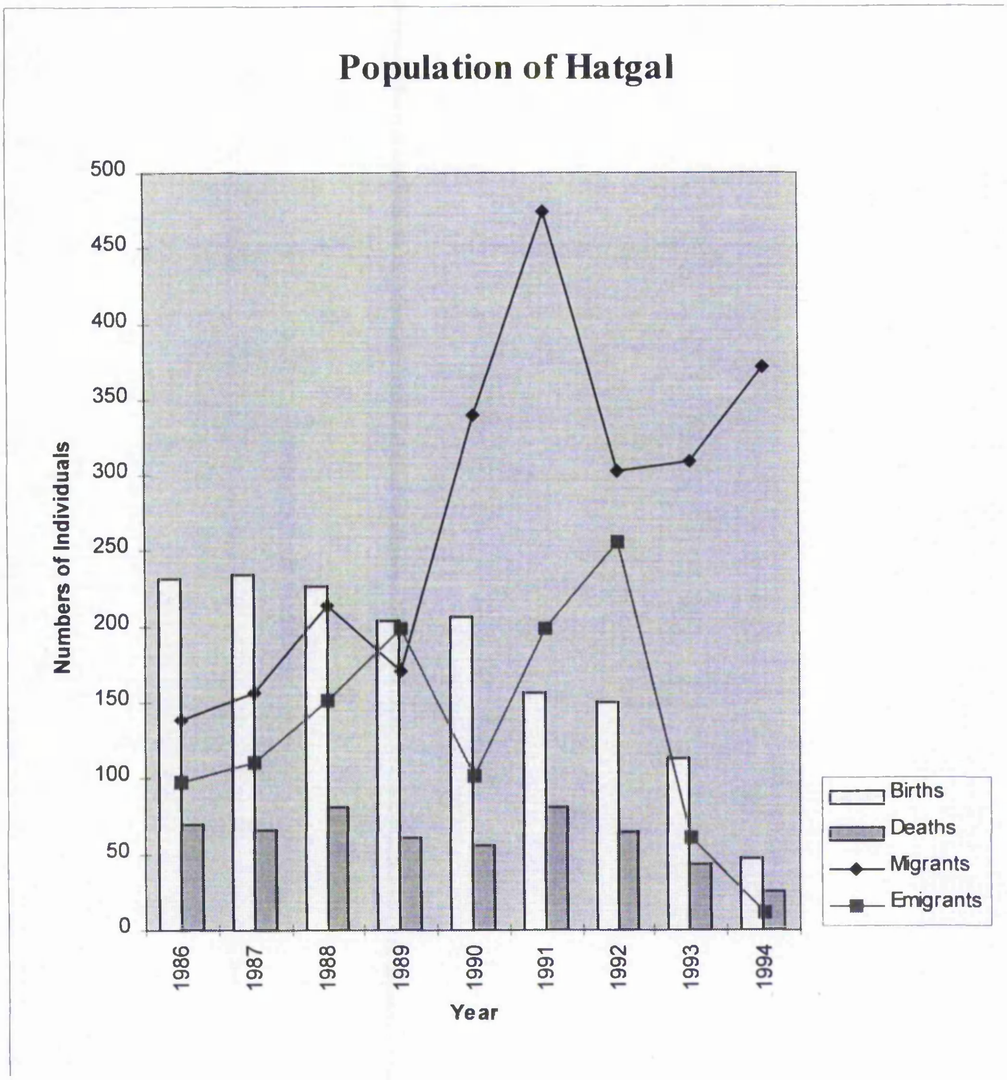
Hankh ***Sum***

Total Population:	2,227 people
	560 families/*gers*

TABLE 1.14 - Population Statistics for Hatgal and Hankh (National Census for Tax, 1994)

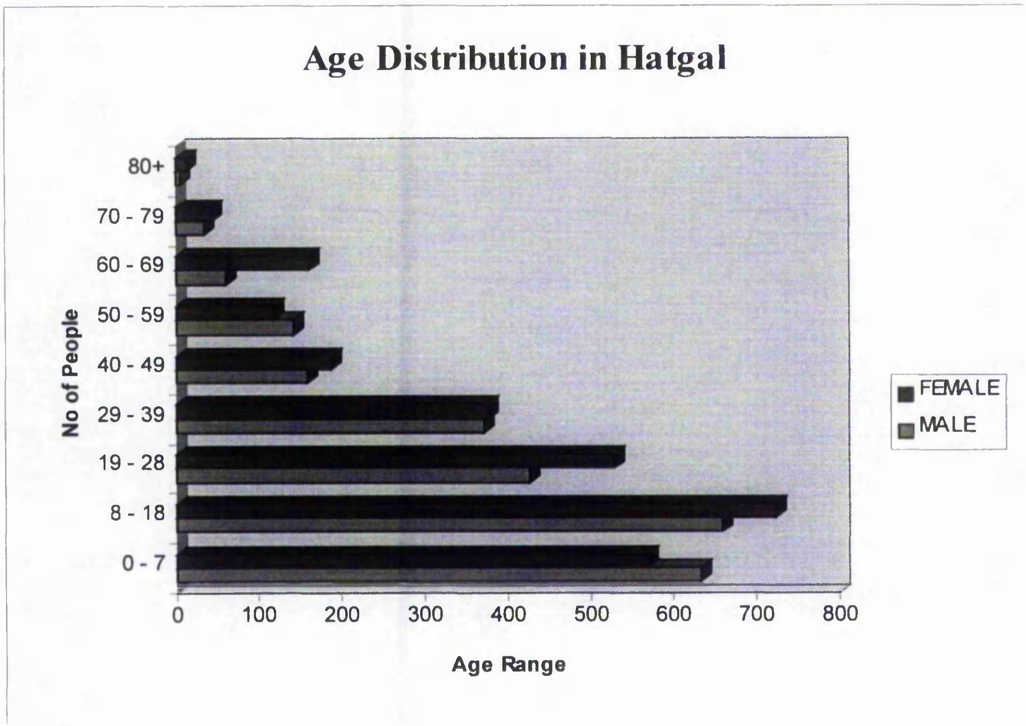
Figure 1.17 illustrates the increase in numbers of emigrants from Hatgal, and the decrease in the number of migrants. Deaths have remained fairly constant over this period, while births have fallen - perhaps due to the lower numbers of women of childbearing age in the region. Figure 1.19 shows this as the number of households in the *sum* remain constant, the population declines due to emigration.

[6] Administrative unit. Mongolia is divided into administrative districts termed *Aimags*. Each of these is divided in turn into a number of *sum*.



(Enkhtuyaa, 1995)

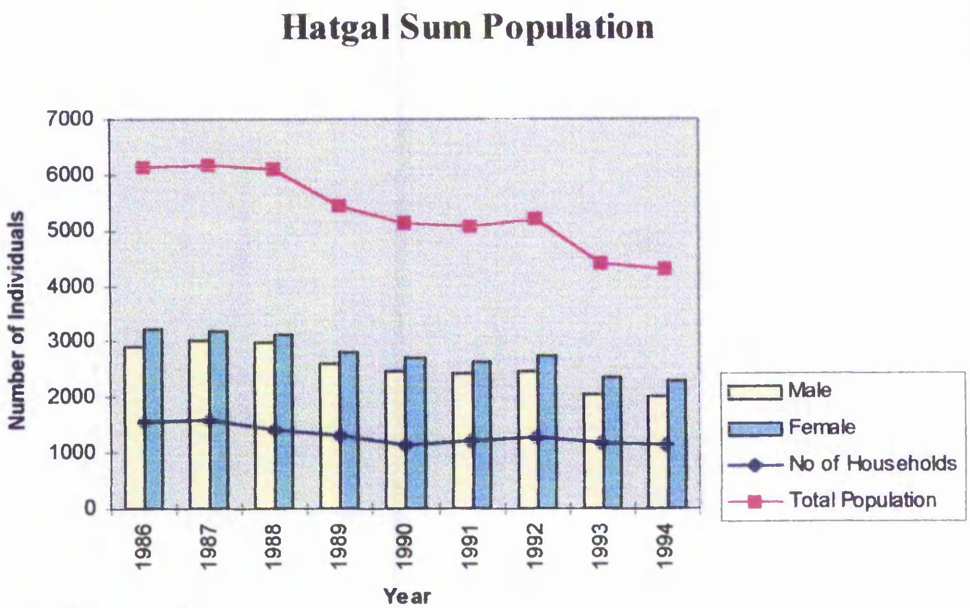
FIGURE 1.17: Population of Hatgal, 1986-1994



(Enkhtuyaa, 1995)

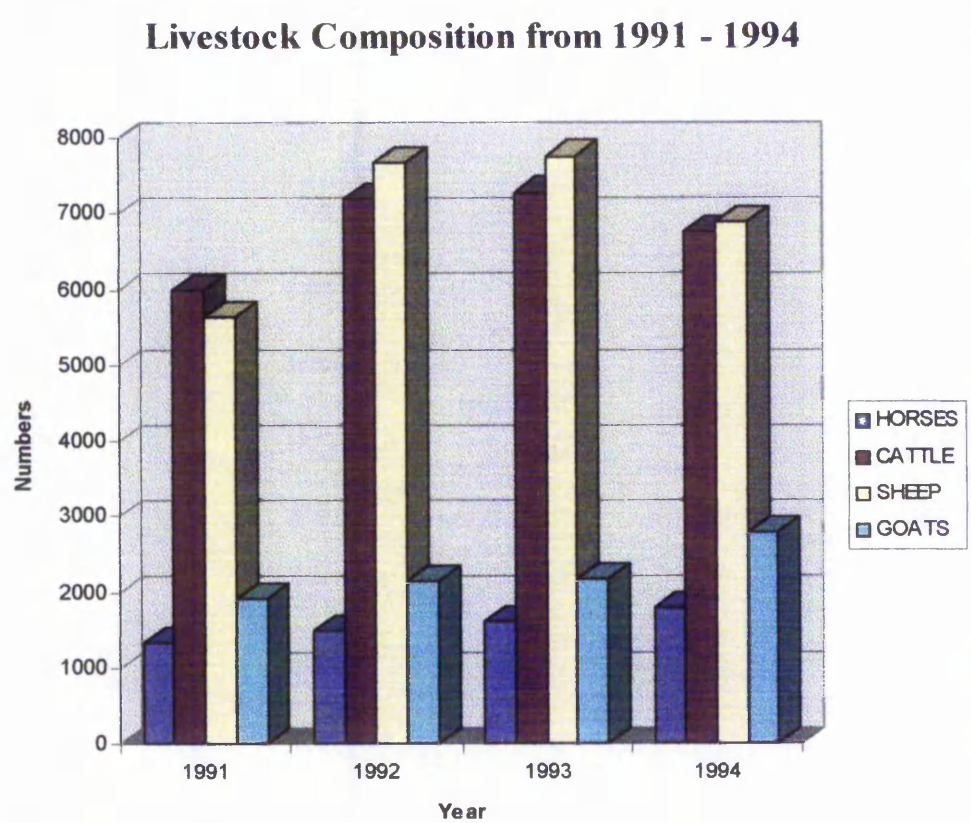
FIGURE 1.18 Demographic Structure of Hatgal

Figure 1.18 illustrates the high proportion of children below 18 years. There seems to be a small decline in births over the last seven years, perhaps due to the decline in industry and loss of many young people to the cities. This is pronounced in the 19-28 year age group where there are noticeably fewer males to females suggesting urbanisation of young men. Additionally, within the 60-69 year age group, there are many more females to males, possibly due to persecution of males as monks during the socialist era.



(Enkhtuyaa, 1995)

FIGURE 1.19: Population of Hatgal sum, 1986-1994



(Enkhtuyaa, 1995)

FIGURE 1.20: Livestock Composition of Hatgal Sum

Figure 1.20 illustrates the growth in the number of livestock (in particular, sheep and cattle) in Hatgal *sum* since 1991. This is likely to be related to the breakdown of collectivisation (Potkanski, 1993), each herder now able to manage his own livestock. However, only the figures for the last year of collectivisation are shown and as livestock levels fluctuate from year to year, this makes it difficult to compare with the collective period.

	Town Infrastructure	1988	1990-94	Today (1995)
1	Construction industry	1	11	no regular work
2	Powerstation	1	1	standstill
3	Food shop	6		1
4	Butchers	3		2
5	Household Goods shop	1	0	0
6	Textile shop	3	0	0
7	Stationary shop	2	0	0
8	Fabric shop	2	0	0
9	Electrical goods	1	0	0
10	Shoe Shop	1	0	0
11	Chemist	2	0	0
12	Clock maker	1	0	0
13	Electrical repairs	1	0	0
14	Hairdresser	1	0	0
15	Bakery	1	1	1
16	Restaurant	1	0	0
17	Hotel	1	0	0
18	Hospital	1	1	1
19	Post Office	1	1	1
20	school with 10 classes	1	1	1
21	Pharmacy	1	1	0
22	Bank	1	1	1
23	Kindergarten	3	2	1
24	Nursery	2	1	1
25	Police Station	1	1	1
26	Courts	1	1	1
27	Town hall	1	1	1
28	cinema	1	1	
29	Library	1	1	1
30	Club	8	6	0
31	Sports Hall	1	1	0
32	Fire Station	1	1	1
33	Petrol Station	1	1	1
34	Public Showers	1	1	0
35	Water Authority	3	3	0

(Enkhtuyaa, 1995)

TABLE 1.15: Town Infrastructure

There has been a decrease in the amount of services available in Hatgal town over the period since 1990 (Table 1.15). The number of food shops has decreased, and the powerstation is at a standstill. There is no formal hotel, and no clubs remaining, with may account for the problems of drink in the local male population, as local males tend to congregate at all times of the day, drinking constantly. (Togtokhnyam, 1995).

1.5.3: Historical and Religious Background

The north of Mongolia, in particular Khövsgöl, has always been the cradle of Central-Asian Shamanism. Ulaanbaatar had 30 shamans registered as recently as 1929, although under socialist influence (by the Russians), they were outlawed, persecuted and imprisoned (Even, 1991).

Shamans had been in decline since the 16th Century, when the Mongol Altan Khan met with the senior Tibetan lama (Akiner, 1991), upon whom he conferred the title of *Dalai* (lit. Ocean). The first monastery was built in 1586 (Storey, 1993). It was in the interests of the Manchu (Quing) dynasty to continue to promote lamaism after it took over Mongolia in the 18th Century, as monks ceased to pose a military threat.

Monasteries were built in Mörön and Renchinlumbe (Togtokhnyam, 1995), although not in Hatgal, as it did not become industrially prosperous until after Communism. However, many shamanistic practices continued, albeit in a sort of synergy with lamaist elements. Even (1991) suggests that lamas made themselves indispensable to the lay population, so that no task could be undertaken without their advice. They also diverted shamanist rituals into lamaist ceremonies. In Khövsgöl, these exist as *ovoo* or *obo*[7] worshipping - sacrifices to the mountain spirits usually found in high places, composed in the shamanist style (Bawden, 1968 and Ayush, 1996). Jagchid & Hyer (1979:168) even go so far as to define an '*oboo*' as a shamanistic rather than lamaist shrine.

Sprinkling of fermented mares milk (*airag*) or vodka (*arkhi*) in several directions as testament to the earth, heaven, and soul is another shamanist (Jagchid & Hyer, 1979 and Bayar, 1996) ritual that has survived in Khövsgöl. Shrines around the lake edge have Tibetan scriptures and prayers inscribed upon them. In addition, the shamanist belief that the soul of a child did not become fully human until the age of about four, when the child could talk, was usually marked with a hair cutting ceremony to "humanise" the child into society (Hamayon, 1987). The task of deciding the day for the ceremony was taken over by lamas, and more recently, since their demise, by an old or wise person within the community (Chimgay, 1995).

Following the 1921 socialist revolution, the monasteries were destroyed and lamas persecuted. A local man in Khövsgöl related that eleven thousand monks in Renchinlumbe were killed, and the monastery demolished. The role that lamas and shamans fulfilled has now been taken over by older people. Revered in Mongolian

[7] Cairn of stones on mountain passes or high places.

society, they help predict dates for weddings, haircutting ceremonies, and give general health advice. Many older people and surviving lamas rely upon their own herbal remedies in place of modern medicine.

Nestorian Christianity was never a strong influence in this region of Mongolia, as it was in the western provinces during the 13th Century. Shamanism continues to be one to the strongest religions in the north, especially amongst the Tsaatan (reindeer herders) and Buryats (Becker, 1993). However, within the last three years, Christians from North America have built a small church in Mörön, to the south of Khövsgöl. A new Buddhist monastery has been built with the help of the local community in Renchinlumbe.

Five cultural groups are found in Khövsgöl *aimag*, (Foggin *et al.* 1994). The Darhat people are a unique native Mongolian speaking ethnic group making up about 1.7 percent (Foggin *et al.* 1994) of the total population of the country. They are generally found in the Darhat-depression region of Renchinlumbe *sum*; an area characterised by its many small lakes. In winter, the Darhats migrate closer to Lake Khövsgöl and take advantage of the sheltered grazing. The Tsaatan (Tuva) people are reindeer herders from Turkic origins, who are found to the far north west of Khövsgöl *aimag*, and cross the Russian border to follow traditional migration and hunting routes. During the summer months, they move south to Renchinlumbe for the festival of Naadam in mid-July. Very few family groups remain (Chimgay, 1995). The Khalka Mongol makes up 77.5 percent (Storey, 1993) of the total population of the country. Buryats (from the Buryatia region of Russia) make up around 1.8 percent (Storey, 1993) and are mainly found to the east of Lake Khövsgöl in the forested lowlands. Urianhai (of turkic origins) make up 1.2 percent (Storey, 1993) of Mongolia's population and are also found to the east of the lake (Foggin *et al.*, 1994).

1.5.4: Current Tourist Trends

Internal MIAT (Section 1.4) flights from Ulaanbaatar to Mörön (Figure 1.2) (the nearest airport) take 1.5 hours. Flights take place twice weekly and carry approximately forty people on each trip. Mörön is located 150km to the south of Hatgal, about 2.5 hours by jeep or 7 hours by truck along the roads. Roads are little more than compacted tracks and only remain passable during the dry months of the summer. By late August, they are muddy swamps, intersected by gullies which are too wide and deep to be crossed when they are flooded. The west side of the lake is effectively cut off from Hatgal during the rainy season, since the only road has to cross one of these washes. Tourists travelling to the region are therefore required to hire a jeep and driver in Mörön. One group of Japanese tourists was observed using a helicopter to travel to their tourist camp and in Ulaanbaatar, foreign businessmen commonly hire helicopters to fly them to the Hentii mountains. If Khövsgöl becomes more popular, it is likely that this could become a viable access route, as MIAT flights are always overcrowded. Table 1.16 gives a cost-benefit analysis for the alternative forms of transport available to reach Mörön and Hatgal.

Transport	Time[a]	Advantages	Disadvantages
Truck	Ulaanbaatar - Mörön (2 days) Mörön - Hatgal (5 hrs)	Can carry large volume of equipment.	Slowest form of travel. Passengers are exposed to elements. Driver travels with relatives. Uncomfortable journey. Requires wide roads.
Jeep	Mörön - Hatgal (2.5 hrs)	Relatively fast. Covers difficult terrain easily	Transports few people and small amount of equipment. Driver often travels with relatives.
Bus	Mörön - Hatgal (3.5 hrs)	Carries 20 passengers with luggage.	Uncomfortable. Cannot traverse difficult terrain.
Helicopte r	Ulaanbaatar - Mörön (3 hrs)	Fast, can carry up to 20 with equipment. Can land virtually anywhere.	Expensive to hire. Noisy - disturbs wildlife over a much greater area.
Plane	Ulaanbaatar - Mörön (1.5 hrs)	Fast.	Only flies to Mörön. Large amounts of equipment expensive to transport.

[a]does not include time taken to get to campsite from Hatgal, which may be 2 hours to Purvdorj's site on west bank. All times quoted are under ideal conditions and do not take into account the effects of flooding.
(Modified from Billiere, 1994)

TABLE 1.16: Cost Benefit Analysis for Alternative types of Transport in Khövsgöl Aimag

A helicopter costs US$800 per hour to charter, plus the cost of waiting time for the pilot. Chartering a plane costs less than a helicopter, but no formal figures were obtained. There is also the difficulty of finding a landing spot (Billiere, 1994).

At the beginning of the 1995 growing season, there were two privately owned tourist camps[8] on the western shore of the lake. Janghai camp is located on the site

[8] Here, camps can be divided into two genera. The first utilises permanent buildings, which may or may not have been originally constructed for the purposes of accommodating tourists. The second consists of groups of *gers* which are constructed and managed in a semi-traditional manner, and which utilise local materials. They are supplemented with independent structures for shower units and central meeting areas.

of a Russian geological station about 30km to the north of Hatgal and serves Mongolian people. Accommodation consists of around ten prefabricated buildings, each housing about twelve people. There are also buildings which house a restaurant, bar and discotheque. The site is in full view of the jeep track, about 250m from the lakeside. The second camp belongs to a businessman from Mörön called Purvdorj. Accommodation comprises five *gers*[9] providing beds and stove. A large arena *ger* is used as a restaurant and social area for traditional Mongolian music evenings. Purvdorj's camp caters for groups of foreign tourists who are travelling with a recognised tour operator.

As the season continued, building work was initiated on a number of other private camps in the southern third of the western shore. These camps are owned by Mongolian companies including Juulchin and MongSuiss which are diversifying into tourism as a means of generating foreign income. All private camps in the region were owned by Mongolian companies - which then provided the infrastructure for foreign agencies such as Explore and Pferd & Reiter to place tourists there.

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[9]Circular tent-like structures consisting of a trelliswork frame covered with felt. Whole families live together inside. A centrally - placed stove provides a heat source for cooking and warmth.

At the present time, there is not sufficiently precise tourism legislation to ensure the distribution of tourism benefits across the whole local community. Tourist camps are usually privately owned[10] and bring in their own resources and staff, effectively bypassing the local people. Industry is subject to strict controls regarding pollution of the lake and other environmental effects and this creates an inertia which the post-communist society finds difficult to overcome (Togtokhnyam, 1995). The general mode of thought by current management seems to be that ecotourism [undefined] is the most desirable type of tourism to have, and all tourists that come to the region are ecotourists. The National Park is badly in need of funding, and so places a high priority on groups of foreign tourists visiting 'authorised' tourist camps.

Those tourists which choose to visit the region individually tend to be discouraged as it is difficult to keep track of their location and collect appropriate entrance fees. The entrance fee to Khövsgöl National Park is US$3 per night and the gateway to the National Park is patrolled by a single ranger[11], who must find it very difficult to stop every vehicle entering the Park - especially so, as much of the traffic is directed at Hatgal rather than tourist camps. Tourists are under no obligation to

[10] The Mongolian constitution of 1992 (Mongolian Government, 1992) gives Mongolian citizens the right to own land, although how this is to be regulated is not yet defined by law and is subject to vigorous debate (Nordby, 1994). In Khövsgöl, each tax payer is required to sign a contract with the Ministry of Nature and Environment to agree to the special limitations on use imposed by the National Park authorities (Wingard, 1995). Local people follow traditional migration patterns, and as a community, it is known which land is utilised by which family (Chimgay, 1995 and Mearns, 1993). According to the 1994 census, 85.7ha are allocated to each person (Chimgay, 1995).

[11] There are about 11 rangers in the National Park employed by the National Park itself from its headquarters in Hatgal. Some rangers are part time to fit in their duties with their herding commitments. They may travel for up to 2 months in their allocated region of the Park before returning home. There is no evidence of detailed information being submitted to the National Park

pay the full amount at the gate and it is very easy to underestimate the amount of time spent in the Park. In addition, there is little information for people to read which outlines the Park's objectives and motivations. However, the UN Biodiversity project team is assessing the situation for production of guidelines which would be available within the National Park (Wingard, 1995).

In essence, because there is little effort at helping people identify with the Park structure, they do not feel obligated to pay the whole or part of the entrance fee. Many individual tourists, when entering the Park, do not know exactly how long they will be staying, or where they will be going. The ultimate decisions about these may depend upon experiences gained in the Park, or even the weather. Several tourists were travelling to Renchinlumbe through the mountains, and one was travelling from this direction into the National Park. It is very difficult for the rangers to trace these people and make sure that everyone has a valid permit. A fuller discussion of Protected Area management will be undertaken in Chapter four.

1.5.5: Social Impacts

Local people practice a class of semi-nomadic pastoral farming usually operating barely above subsistence level. Most families farm a mixture of cows, sheep, yak, *khainag* (a sterile cow/yak cross), goats and horses. The family and community are of prime importance within Mongolian culture and animals may be herded by distant members of one's family while owners are engaged in other employment

administration, although there are ranger manuals that detail statistics for producing wildlife densities.

elsewhere. Similarly, children may engage in herding at the *ger* of another family if their help is required.

Although this redistribution of labour is common, tasks are strongly defined as either "women's" or "men's" jobs and this can create a series of problems when recruiting labour for the service of tourism. Cooking and cleaning jobs taken by local women effectively doubles their working day - as household tasks also have to be considered. Menfolk would not usually undertake these tasks - jobs that could be offered to them are generally filled by labour drafted in from Mörön. It is imperative that future management plans take these inequalities of labour into account.

Generally, each family moves four times a year with the seasons, following the availability of water and grazing. Although territories are unmarked, the same grazing patterns are followed each year. Local people are aware of which land is used for grazing and which is not - unlicensed camping disrupts these patterns and curtails the quantity and quality of grazing available during the winter season when food is already scarce.

Animals (both domestic and wild) are killed in the winter, the meat left to freeze-dry in the extreme cold. This then provides sustenance for the summer months when animals are left to breed, while the families live on the preserved dried meat and the extensive supply of dairy products that can be produced from the animals.

For the majority of rangers, these manuals give guidelines that are inappropriate for their skills.

Mongolian hospitality demands that any stranger visiting a *ger* is fed without question. Within the enclosed society, this hospitality evens out over time, as it is likely that you would visit your neighbour as much as they visit you. However, with the influx of tourists into the region, food and wealth begins to leak from the system if there is not a proper legislative structure in force to enable distribution of tourist-generated wealth across the local society.

Although tourists may make some sort of gift to the family, packets of cigarettes and postcards cannot replace food, which would hold a much higher value, especially within a poor family. In time this tradition of hospitality may cease - altering the position and focus of the community (Cooper, 1993 and Sneath, 1993).

1.5.6: Economic Impacts

The proximity of Khövsgöl to the Russian border (Figure 1.12) has been responsible for the prosperity of the region in the past. Hatgal was regarded throughout Mongolia as the industrial city of the north, as it supported a thriving community of about 6000 people, many of whom were employed in the sawmills (Academy of Sciences, 1990)

Recently (since 1990), since the Russian withdrawal from Mongolia, this border trade has ceased and many of the industries associated with Hatgal have had to close due to economic pressures. The transition of the region into a National Park has focused greater attention by the Ministry of Trade and Industry and the

Ministry of Nature and Environment on environmental impacts and polluting industries and practices (Section 1.4.4).

Reading & Johnstad (1994) suggested that local people in Hatgal blamed the National Park for the closure of the industries and the loss of prosperity that the region once enjoyed. However, from interviews with local people, Fielding (1995) did not find this to be the case, and noted that local people were very keen to "save the nature", although they were not always sure of the right way to accomplish this. Blame for the economic depression was not apportioned to any specific cause apart from the transition to a market economy, with the exception of the Russian withdrawal, which was targeted by two local families (Chapter 7, Section 7.2.5.2b).

1.5.7: Environmental Impacts

Current legislation prevents private tourist camps from locating within a certain distance (200m) of the lake shore. Special provisions have to be made for the disposal of refuse, and it is also illegal to remove living wood from within the Park. However, it is significant to note that several areas along the shore have been deforested - the canopy has been removed leaving 40cm high stumps remaining. It has been suggested (Chimgay, 1995) that these areas were subject to clearance for use as fuel on one of the ships in operation on the lake in previous years and also for local sawmills. It is unknown what effect the removal of the forest canopy has had on soil loss in these areas, decomposition of the stumps is very slow as the growing season is only two months long, and secondary growth is inhibited by grazing animals and discontinuous permafrost.

Khövsgöl is an ultraoligotrophic lake (Billiere, 1994); which means that it contains very little nutrient in solution, and there is good oxygen availability due to the low water temperature. Any runoff, or leaching of nutrients from the surrounding soils would introduce conditions whereby algae could proliferate. There is evidence of algal blooms late in the growing season, close to the lake shore which are not affected by substrate. If more nutrients are introduced to the lake, through clearance of vegetation allowing runoff, or via human or animal effluent, then this will severely curtail the water quality. At the present time, the water can be drunk without purification if it is taken from an area away from human or animal populations.

Current sewage processing facilities attached to private tourist camps are elementary in construction. At best there is a system of piping leading to a primary settling tank screened by a covering of gravel; and at worst they consist of a deep pit dug into the ground, with some shielding. In Janghai tourist camp, there is evidence of some leakage of effluent into the lake, together with a continued influx of petrol caused by a large spillage some years previously.

With an increase in tourism to the area, these disposal systems will be unable to cope with the greater volume of effluent. Coupled with the problems of discontinuous permafrost (Stone, 1992) only a few centimetres from the soil surface, the possibility of significant runoff or leaching from these systems is very high. New pits will have to be dug more frequently and may account for greater numbers of coliform bacteria near the lake boundaries.

It has been shown by Bennett (1995) and Harper (1995) that the numbers of certain protected species within the Khövsgöl National Park have decreased over the last few years. Significantly more Ibex were found outside the Park boundaries - in more remote areas - than within it. Numbers of Brown bear in the region have also declined - evidence of recent scat and sign[12] was unforthcoming in the lower third of the western shore. Interviews with local hunters (Section 7.2.5.2b) also confirmed these findings - as they commented that known habitats have been deserted over the past two years. It is not certain whether this decrease is related to an increase in visitors to the area, or poaching for tourist-related sales. Hunting for food may also have increased, as the economic status of the region continues to decline.

Greater numbers of visitors to the region will increase the frequency of all forms of transport. Currently these include Russian-made Jeeps and large trucks. These vehicles gouge large potholes in the tracks along the perimeter of the lake and compact the soil. In places, drains have been put in, and the tracks gravelled over - nevertheless, by the end of the season, some tracks become virtually impassable.

Soil compaction decreases the oxygen available to plants, and selects for those species which are able to resist disturbance and can tolerate the more stressful

[12]Evidence of animal activity through faeces, tracks, movements of earth, etc.

physiological conditions (Grime, 1979). At this altitude, disturbance is exhibited as an influx of grasses which contain less nutrients and grow shorter than the herbaceous vegetation they replace (Sedelnekov, 1988). Unofficial campsites thus restrict the amount of grazing available for livestock belonging to local people, particularly obvious in the winter season (impacts of tourism are further discussed in Chapter 3).

Given that a high profile is attributed to the development of tourism in this region by the Ministry of Nature and Environment, there is a real potential for environmental degradation through disruption of grazing and loss of habitat(s). It is true to say that the patterns of nomadic movement and the amount, frequency and type of grazing by different animals, all contribute to the diversity of vegetation in this region, and therefore to certain aspects of the wildlife distribution. The inclusion of permanent tourist sites which disrupt these grazing patterns and the movement of tourists through the Park creates a particular management problem that can only be analysed by taking account of a variety of data.

1.6: Conclusion

There is a strong need for the Park Management to recognise the goals they have set for Khövsgöl and to build suitable legislation around these goals in order to protect those aspects of Khövsgöl that they feel need to be protected or regulated. Within this brief the aims of this research are firstly; to evaluate the potential for a Geographical Information System (GIS) to aid decision making for sustainable tourism and the attainment of Park goals and secondly, to suggest appropriate management techniques.

One of the conflicts which will need to be resolved is the degree to which mining will occur within the Park, and how this impact can be best managed for the benefit of local people and tourism. There are also important conflicts generated between local people and tourism development, in that winter grazing will be disrupted by tourist activities. This, once again, points to legislation as a basis by which tourism benefits can be distributed more effectively amongst the community, thus negating to some degree the economic hardship caused by lack of grazing for livestock.

The Geographical Information System will be evaluated as to what extent it might be used to integrate environmental, social and economic data in order to provide a profitable database for interrogation as a basis for decision making.

The objectives needed to achieve this are:-

- List environmental data needed for decision-making. Collect the data and transfer it into digital format for storage by the GIS database.

- List social and cultural data needed for decision-making. Collect the data and transfer it into digital format for storage by the GIS database.

- Take into account management decisions and legislation currently being undertaken and establish the goals of the National Park.

Determine whether and to what degree the GIS can be used to:

a) integrate these two different sources of information;

b) aid decision-making; and

c) integrate National Park resources and aid in achieving National Park goals.

Previous methods of data analysis have involved the hand drawing or overlaying of maps showing different aspects of the environment, and tourist hotspots. However, this is time-consuming, and therefore very costly in terms of manpower.

Recent advances in computing power and the development of software have enabled packages to be created that can integrate different types of data and analyse them on a spatial basis - that is - as well as taking into account a feature's characteristics, they also take into account its position in the region of interest.

This allows the interrogation of the database in a variety of new ways, concerning the impact of one feature on its neighbours. Geographical Information Systems (GIS) have been successfully used in a variety of applications, including environmental, municipal and business subjects, worldwide. The analysis tools available in a GIS (Chapter 5) allow decisions to be made about a problem or management situation based upon all the data available. In order to make decisions about how tourism should be managed, it is required that a database is compiled, comprising information about the physical environment, the local people living in the Park, and the category of tourists that are likely to be attracted.

Table 1.17 outlines the breadth of data (and the various sources of these data) required in order to base planning decisions. It is important that these data are collated, as they are the basis upon which a Park database could be constructed and decisions regarding location and management of tourist facilities could be made using a GIS.

Since Khövsgöl National Park needs a revised management plan in terms of provision of a tourism and recreation service, it is important to define the types of tourism that might take place in the region and their characteristics. Chapter two will examine the tourism concept in terms of supply and demand and identify the existing framework in which the tourism sector exists in Mongolia.

Type	Possible Sources
Environmental	
Base Maps	*Secret Service*
Climate	*Ministry of Nature and Environment*
Digital Elevation Model	*Construct from digitised maps or SPOT satellite data*
Geology	*Khövsgöl atlas, Geological Institute*
Landuse	*collect from Daschiirev*
Location of campsites	*GPS Gers in 1996*
National Park Boundary	*Photocopied map in Ulaanbaatar*
Position of Trails and attribute data about usage	*Rangers 1996*
Potential Animal Distribution (by animal)	*Complementary Expedition research, 1995*
Satellite Data	*Several sources in Ulaanbaatar - refer to the Baker report*
Type and availability of fuel resources	*Satellite Imagery*
Vegetation classified according to susceptibility to each proposed tourism activity	*Satellite Imagery and Atlas data*
Water Resources (Lakes, Rivers and Tributaries)	*Basemap*
Cultural & Community	
'State of health' of cultural practices	*Survey - pilot survey 1995*
Dependence upon NP resources	*Survey - pilot survey 1995*
Extent of education available	*Hatgal Governor*
Extent of nomadic movements	*Survey - pilot survey 1995*
Farming practices and patterns	*Survey - pilot survey 1995*
Location of settlements	*GPS*
Numbers and location of people	*GPS/Survey/Hatgal Governor - pilot survey 1995*
Numbers of children	*Survey/Hatgal Governor - pilot survey 1995*
Numbers of livestock	*Survey - pilot survey 1995*
Occupation	*Survey/Hatgal Governor - pilot survey 1995*
Perceptions of the environment	*Survey - pilot survey 1995*
Perceptions of the National Park	*Survey - pilot survey 1995*
Perceptions of tourism	*Survey - pilot survey 1995*
Position of resources (e.g. NP HQ)	*GPS*
Production of handicrafts	*Survey/Hatgal Governor - pilot survey 1995*
Religion	*Survey - pilot survey 1995*
Structure of the community	*Survey/Hatgal Governor - pilot survey 1995*
Types of settlement	*Survey - pilot survey 1995*
Tourism	
Activities participated in and where	*GPS/Survey/Tourist Companies/Tourists*
Amount of money spent in the region	*Tourist Companies/Tourists*
Availability of food and resources required per tourist	*Tourist Companies*
Average length of time stayed	*Tourist Companies/Tourists*
Numbers of tourists in the region	*Tourist Companies*
Potential tourist bed space in the region	*Tourist Companies/National Park*
Status and capacity of litter disposal and sewage facilities	*National Park*

Table 1.17: Data Requirements[13]

[13] Khövsgöl GIS – some suggested data sources. Some of these are investigated in more detail in this thesis Others would be collated by the GIS administrators and their integration is well documented in a number of GIS texts.

Chapter Two

DETERMINANTS OF DEMAND AND SUPPLY

Chapter Two

DETERMINANTS OF DEMAND AND SUPPLY

2.1: Introduction

This chapter will consider the tourism concept with respect to supply and demand and will analyse these in the light of Mongolia's developing tourism industry (Section 1.3). Demand influences are discussed with reference to motivations, tourist types and marketing, concentrating upon a specific avenue of tourism - ecotourism. The results of the Visitor survey in Chapter 7 are analysed in terms of the visitor classifications presented here. Supply influences are addressed mainly to aspects of tourism impacts upon the development of a region and consider both environmental and socio-cultural influences (Chapter 3). Finally, supply will be examined in the context of sustainable tourism development as an underpinning for projected planning and management strategies (explored further in Chapter 4), essential elements of the management plan for Khövsgöl National Park.

2.2: Tourism Demand

2.2.1: Definitions

It is important to define tourism in order to monitor movements across regions, both for research and economic purposes (Pearce & Butler, 1993). In order to distinguish tourists from other forms of travel, such as nomadic or business movements, tourists have been described in terms of distance of movement and length of stay (OECD, 1973).

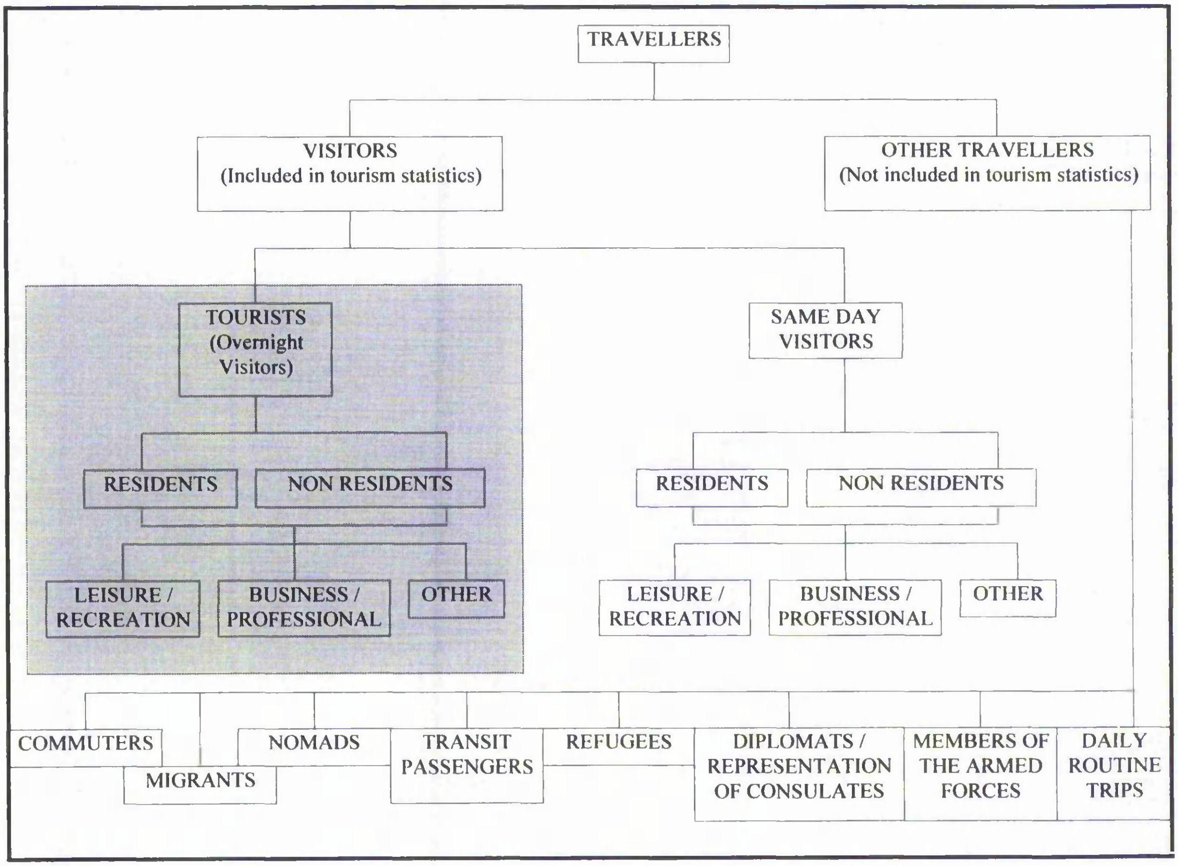
The League of Nations in 1937 (OECD, 1973) defined the 'international tourist' as anyone visiting a country other than that which is their normal residence, for more than twenty-four hours. However, this definition excluded students, commuters and transit tourists and was reconsidered in 1950 by the International Union Official Travel Organisation (IUOTO). A category of 'international excursionist' was defined which included those people visiting a country for fewer than twenty-four hours.

Other definitions take into account distances, for example the Canadian definition that tourism involves movement over 25 miles or more (Burkhart & Medlik, 1981). However spatial perception is relative and depends upon population. This definition would not be so widely accepted in the UK where population densities are much higher and a shorter distance would be expected (Mitchell & Murphy, 1991).

Tourism has been defined by Przeclawski (1993:10) as:

> "Tourism in its broad sense is the sum of the phenomena pertaining to spatial mobility, connected with a voluntary, temporary change of place, the rhythm of life and its environment and involving personal contact with the visited environment (natural, cultural or social)."

With respect to this research, business travellers are an important sector of the tourism market in Mongolia - as market restructuring is aided by foreign Banks and aid agencies. These people, although not tourists according to Przeclawski's definition, do explore some parts of Mongolia while they are posted in Ulaanbaatar, and so much of the tourism infrastructure has been created to cater for their needs. This market is very different from those tourists attracted by the countryside, but seems to have been neglected in the planning process and it is assumed by the Mongolian Government, that tourism in Ulaanbaatar is an acceptable model upon which to base planning strategies in other areas of Mongolia.



(WTO, 1993)

FIGURE 2.1: Classification of Travellers

Classification of travellers themselves tend to be based upon socio-economic criteria and age (usually to make some form of judgement about motivations based upon spending capacity, and the sort of activities that may be undertaken), and trips may be classified in terms of purpose. The World Tourism Organisation (1980) recognises four categories of VFR (Visiting friends and relatives), Business, Health, Religion and Other. For the purposes of this research, tourists will be defined as designated by the WTO in Figure 2.1. In particular, the area defined by shading is considered when discussing tourists to Khövsgöl.

Classification of visitors to Mongolia is important as, in conjunction with the purpose of the trip, tourist type directly affects the provision of services by the host. In any management plan, there is a need to distinguish the type of visitor in order to provide relevant services (De Kadt, 1979). It is also important to note the distinction between which visitors are visiting Ulaanbaatar, and which are passing through Ulaanbaatar on their way to some other region of Mongolia. To date, this distinction appears not to have been made and therefore, service provision in Ulaanbaatar is assumed to be a model of adequate provision for visitors elsewhere in the country. Over the past two years, local people have begun to recognise the independent traveller market, and provide travel advice and accommodation on an informal 'guest house' basis. Initial contact with foreign visitors is made chiefly at Ulaanbaatar's international airport.

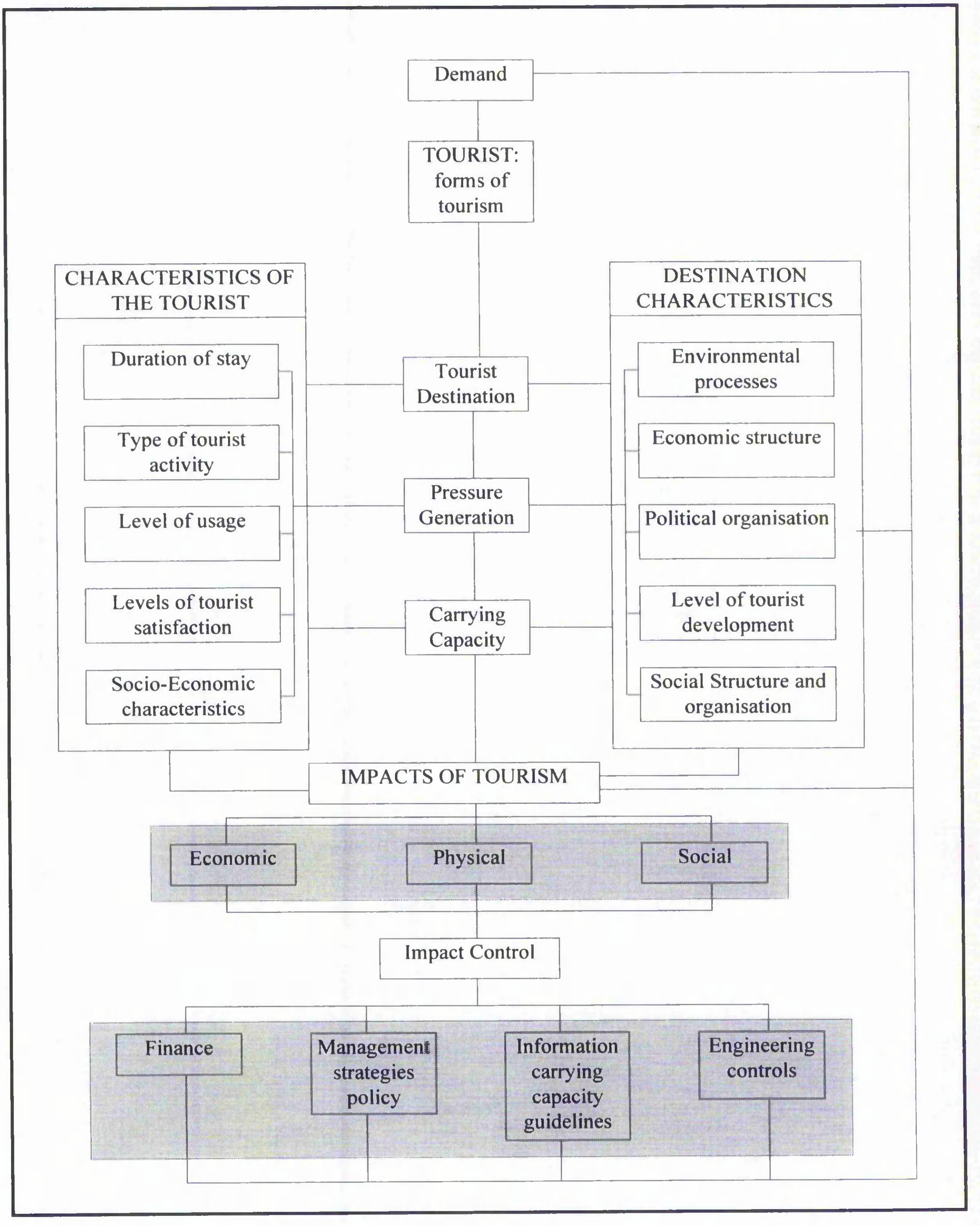
2.2.2: Concept of Demand

The destination lifecycle (Butler, 1991) is a proposed model of stages through which tourism development may evolve through time. According to this model, Khövsgöl is currently at the 'exploration' stage of this model, as it has only recently allowed international tourists outside the capital, Ulaanbaatar. However, this model does not take into account the impact of domestic tourism and views the site in terms of international tourists.

The tourism infrastructure of Khövsgöl exists in response to changing demand. Since Khövsgöl is at the beginning of its destination lifecycle (Figure 2.4) it is presently planning its tourism development around the provision of services for what it terms "Ecotourists" (Section 1.1). However, the nature of tourism to Khövsgöl will change over time as the character of **demand** changes.

Figure 2.2 illustrates the components of the tourism concept. Characteristics of the tourist and destination characteristics act upon the tourism product, influencing destination, pressure generation, and carrying capacity (Section 3.4). These all interact to generate tourism impacts (these may be divided into economic, physical and social but these are not exclusive and are linked).

Impact upon a particular spatial area is therefore controlled by both the destination characteristics (supply) and the characteristics of the tourist (demand). Although **environmental** impacts are generally confined within Khövsgöl, **economic** and **social** impacts may have wider implications through trade routes and "social networks" (Sneath, 1993). In order to address these impacts, controls depend upon funding availability, management strategies and policies enforced, the information available upon which to base decisions, and the engineering controls viable for the physical control of impacts (further discussed in Chapter 3).



(Modified from Weiler & Hall, 1992)

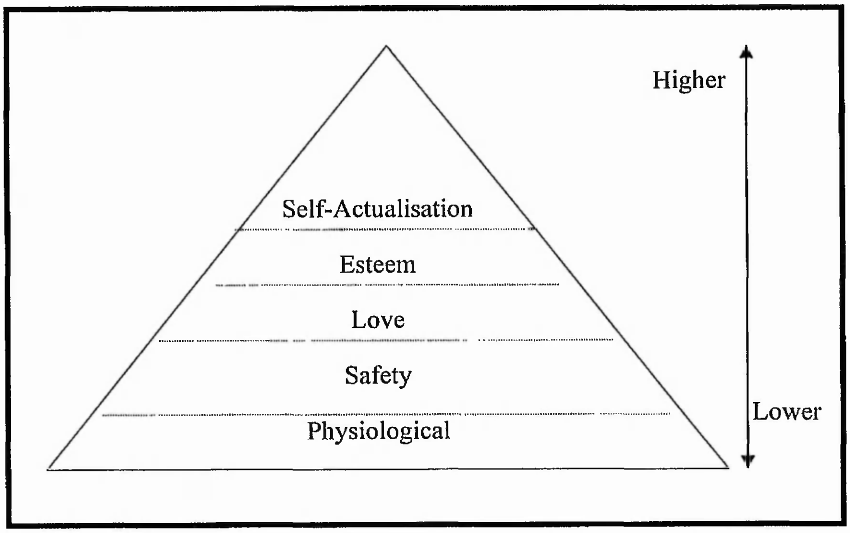
FIGURE 2.2: A Conceptual Framework of Tourism

It is widely held that the tourist product follows demand. However, in Khövsgöl, tourist demand seems to follow the product - i.e. the National Park product - therefore explorer-type tourists visit. This is the model to which managers are working, i.e. they have a nature product and thus all tourists who come to Khövsgöl are nature-based. This is a dangerous assumption to make in light of Park management issues - not all tourists can be defined as explorers and, therefore, they may not respect the tourism product, or may inadvertently help to change it in some way.

Impacts upon the characteristics of Khövsgöl change the supply product in terms of its physical and cultural environment and, therefore, reflect upon the demand for the product. This 'development' of a region can be controlled or mitigated to some degree by an understanding (and monitoring) of impacts (Section 4.3) through an effective management policy with adequate controls and goals (Mill & Morrison, 1992).

2.2.3: Types of Tourist in Relation to Development

As the nature of the destination changes, the nature of the tourist demand also changes, affected by the changing image of place. Maslow (1987) suggests a hierarchy of needs that act as motivators for individuals, and thus should be addressed by a holiday destination (Figure 2.3). Physiological needs are fundamental requirements of warmth, nutrition etc. Safety needs are feelings of physical security in the new environment. Motivation of love is for the environment or for others, esteem as a motivating factor is related to feelings of wellbeing and 'pride' at achievement. Self actualisation is motivation linked to learning.



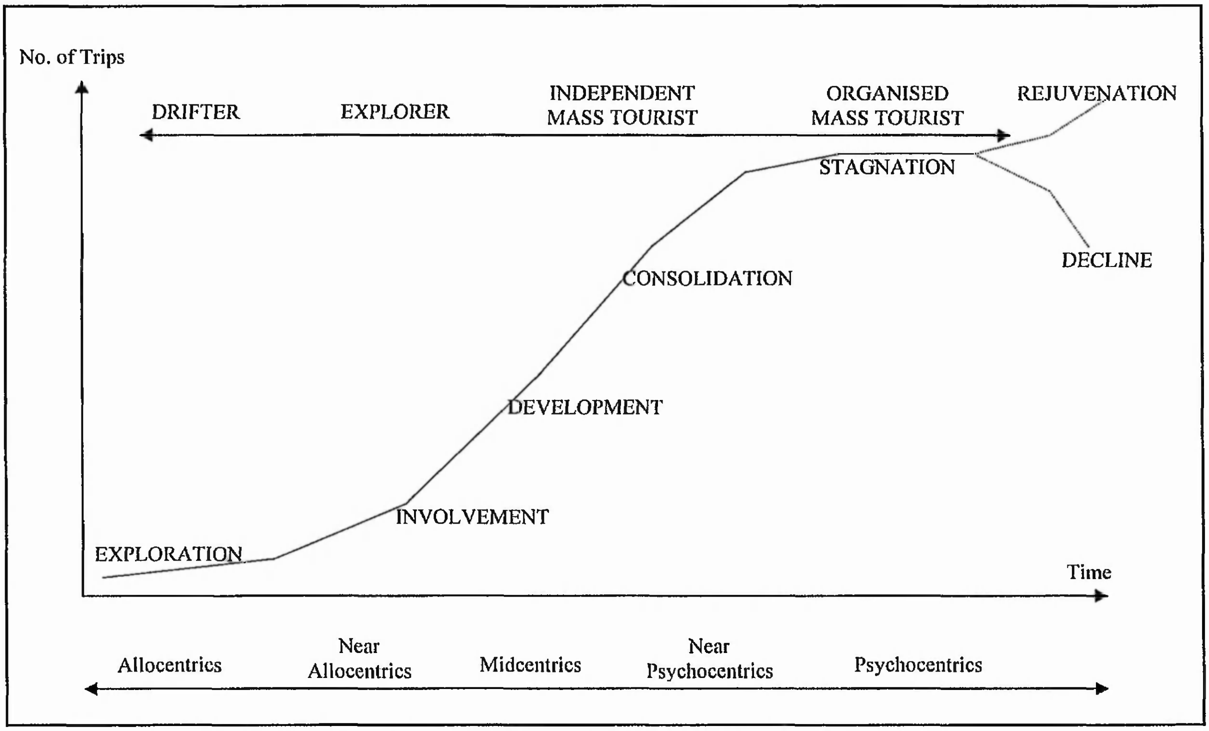
(after Maslow, 1987)

FIGURE 2.3: Maslow's Hierarchy of Needs

Once a lower need is satisfied, it is no longer a strong motivator, and the needs of the next level up become the motivating factor. Only **unsatisfied** needs can act as motivators.

Figure 2.4 illustrates the destination lifecycle of an area with respect to the needs and wants of tourists. Butler (1980) describes a model of destination lifecycle where slow growth (Exploration) is followed by an exponential increase (Development) in the number of visitors, culminating in a Stagnation phase which may lead to an increase in further visits (Rejuvenation) or a Decline, depending upon management and perception of the region.

Khövsgöl is near the beginning of the tourism lifecycle in terms of time (if the opening of the region to international tourism is taken as the beginning of this lifecycle). However, it is recognised that tourism to the region did occur before this time in terms of Domestic, Visiting Friends and Relatives (VFR) and movements from Soviet bloc countries. How applicable is this model in the forecasting of future developments? Is it likely that the region will ever develop to the point of attracting 'organised mass tourism' (Cohen, 1972), or is this happening already - under the guise of 'exclusive' or 'eco' mass tourism operators? Mongolia still has tight controls over the movement of foreign visitors and, therefore, charter tourism is encouraged, where everyone stays in 'camps' and undertakes activities such as horseriding or *ger* visits from this base.



(Modified from Butler, 1980; Cohen, 1972 & Plog 1972)

FIGURE 2.4: Butler's Tourist Area Life-cycle Related to Cohen and Plog's Tourist Typologies

Cohen (1972) and Plog (1972) apportion tourists to typologies based upon their physical and educational requirements. Cohen in particular relates typology to level of education and interaction with the host environment. The four classes defined in Figure 2.4 are identified as 'Drifters', 'Explorers', 'Independent Mass Tourists' and 'Organised Mass Tourists'. Drifters seek very little familiarity, shun contact with tourists and tourist establishments, identify with host community, learn the language, and work and live within the community.

Explorers have a dominant need for novelty, and arrange their own trips. They attempt to get off the beaten track, but still require comfortable tourist accommodation and retain the basic routines of their lifestyle. The Independent Mass Tourist utilises facilities made available by the tour operator, have some control over their itinerary, still visit sights, and seek more novelty but of a routine kind. The Organised Mass Tourist is the least adventurous of the four typologies and remains primarily in hotel complexes. They adhere to a fixed itinerary provided by tour operators and trips out are organised and guided. These tourists make few decisions (Cohen, 1972).

In Mongolia, the organised mass tourist is a key component of the visitors to Ulaanbaatar. Under the previous Communist regime, the state controlled tour operator - Juulchin - organised all excursions and accommodation for foreign visitors. Since the development of a free market economy, Juulchin has a number of rival operators but still operates controlled tours around Ulaanbaatar (Section 1.4.5).

At present, Khövsgöl does not support an infrastructure that would allow organised mass tourists, as the interesting features of the region are found outside the accommodation camps. Currently, there would not be sufficient 'activities' and facilities on-site to provide for this tourist typology. Section 8.2.4 discusses these issues further.

In contrast, Plog (1972) proposes a typology based upon psychological needs and wants. At one extreme are the 'Allocentrics' who are curious and inquisitive, follow independent vacation desires and prefer exotic destinations and unstructured vacations and at the other extreme there are 'Psychocentrics' who seek familiar destinations and security of the travel trade and touristed areas. 'Midcentrics' have the characteristics of both Allocentrics and Psychocentrics, seeking both familiarity and excitement. They represent the bulk of the market.

Currently, Khövsgöl is at a low development stage, between exploration and involvement (Section 1.4.5), but according to this model would be expected to undergo an acceleration in the number of visitor arrivals as the region gains tourism-related infrastructure and the typology of visitors changes both psychologically and socio-economically. Not all locations will undergo development to the same degree (in terms of the changing tourist typologies). Some locations reach a stagnation level in their own development at an earlier stage in Cohen (1972) or Plog's (1972) typology continuum. Thus, some regions may never take organised mass tourists. The model is relative in terms of 'number of trips' and 'time', as it attempts to illustrate a pattern of development, rather than an amount or fixed timescale. These issues are discussed further in section 8.2.4.

2.2.4: Types of tourism

At some point during the development lifecycle, tourism may change from low-level special interest (alternative) tourism, to larger-scale mass tourism as the number of visits increase. Figure 2.5 illustrates the division of tourism into mass tourism and alternative tourism (where alternative tourism is described as an alternative to mass tourism). The many activities that make up alternative tourism (Jones, 1992) have been further grouped into cultural tourism, nature tourism and adventure tourism. Some types of tourism may fall within two or more boundaries, and it is suggested ecotourism has elements of all three types, although nature, cultural and adventure tourism on their own are not necessarily ecotourism.

Additionally, it is necessary to consider the elements which make up ecotourism. Is ecotourism defined by the type of tourist visiting a region, or is it defined as any tourist that comes to see the natural environment? Does ecotourism share some elements of each, or is it related to the characteristics of the service provision on the site and the management in place?

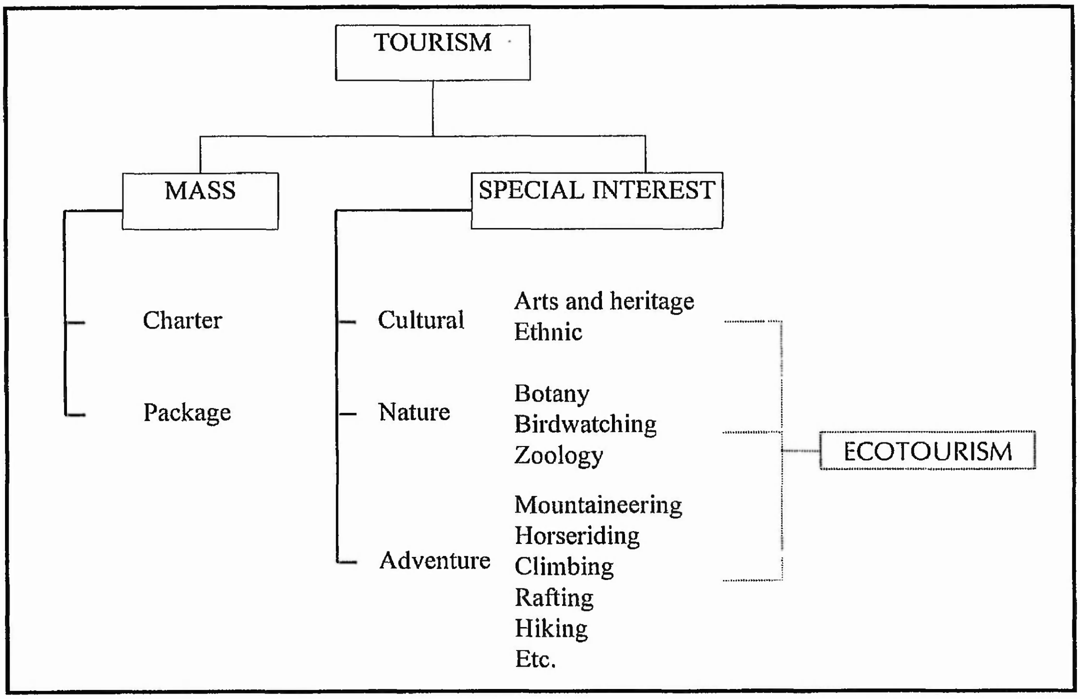


FIGURE 2.5: Types of Tourism

This classification of tourism relates to the types of tourists and Maslow's hierarchy. Cohen (1972) defines organised mass tourists as the least adventurous typology, remaining within the organisation of their accommodation and fixed itineraries. Within this definition, Maslow's (1987) hierarchy of needs tends towards physiological (rest and recuperation) and safety. In contrast, special interest tourists have 'self actualisation' as a motivating factor and focus upon particular interests such as culture, nature and adventure. In these cases, special interest tourists could undertake some of the features of an organised mass tour as long as their self-actualisation needs were fulfilled.

Whereas cultural tourism is a general term encompassing all types of cultural tourists, there are facets within this which have different impacts upon the socio-cultural environment of the destination community. These may include arts and heritage tourism, and ethnic tourism (Sofield, 1991). Ecotourism is described as having elements of some special interest in nature or culture and may also include some adventure element.

The WTO (1980) describes arts and heritage tourism as study tours, performing arts and cultural tours, travel to festivals and other cultural events, visits to sites and monuments, travel to study nature, folklore or art, and pilgrimages. Heritage can be defined as cultural traditions, as well as artefacts, which are inherited from the past. Ethnic tourism involves some form of direct experience with the host culture and environment by visits to homes and villages, and observation or participation in traditional activities. In the case of Khövsgöl, there is very little interpretation of culture offered by either guides or literature, although Ulaanbaatar is beginning to succumb to a more mercenary stance in terms of marketing its cultural heritage.

Nature tourism is described by Valentine (1992) as being based upon the enjoyment of natural areas and the observation of nature. In this instance, it is the appreciation of nature through the process of self-actualisation, rather than the experience of nature as organised mass tourists might experience on a beach. Whereas nature is the motivating factor in nature (special interest) tourism, it is not the motivating factor for organised mass tourists on a beach, where the wider environment such as the climate and other activities, are more important. Organised mass tourists also perceive the beach in the context of providing for some physiological need, warmth, a tan and relaxation, rather than any self-actualisation or learning experience.

Beresford & Lucas (1992) suggests that nature tourism has a low impact environmentally and contributes socially and economically to the nation. This broad classification of nature tourism as being "better" than mass tourism is shortsighted at best; to enjoy does not necessarily mean to understand. The image that nature tourism is of low impact environmentally tends to be taken out of context. In this instance, "low-impact" could mean in comparison with a multi-storey hotel complex. It is also dangerous to assume that this type of tourism contributes in any way to the social or economic framework of local people. It has been clearly demonstrated that the structure of tourism in the Khövsgöl region effectively bypasses local people (Section 1.5.5), although it does benefit the 'nation' at higher levels.

Adventure tourism is described by Weiler & Hall (1992) as incurring active participation in some sort of physical activity such as climbing, rafting, mountaineering and horseriding. It is characterised by "an escape from modern living". It is the activity rather than the destination that attracts adventure tourists; the environmental setting is a backdrop.

2.2.5: Ecotourism

Wight (1993b) perceives Ecotourism as the public interest in the environment which can be used to **market** a product. This same public interest may be used also to **conserve** the resources upon which the product is based. These views may be complementary but require integration of both views to be sustainable over time.

Within this concept are embedded other issues concerning the tourist perceptions of their role either as active participants in ecotourism related activities, or as passive observers. This also defines the type and degree of impacts they are likely to make upon the destination geoecology[1]. However, it is difficult to define and agree upon what makes an ecotourist and it is widely (and indeed dangerously) assumed that an ecotourist is in some way "better" than other types of tourists because of the benign image that is perceived by the word ecotourist (Budowski, 1976 and Cater, 1995). In some ways, ecotourists may generate more significant impacts, since they demand a close interaction with people and the environment.

At its most superficial, ecotourism has been used as a label to promote tourism to regions where landscape is marketed (Poon, 1994). At the other extreme, the term may be used to define a more values- based typology whereby some active participation is made by the tourist in conserving the geoecology of a region. It is difficult to define whether this participation either through financial support, education and understanding, or physical contribution to projects has any effect on the label (Figure 2.6).

This illustrates the spectrum of language used to market ecotourism (Horner & Swarbrooke, 1996) - ranging from the 'sell' to the 'values' oriented phrasing. This may also be viewed as a continuum along which different types of tourists may fall. It must be recognised that ecotourism in its broadest sense is not limited to particular types of tourists, although Mowforth (1993) (Table 2.1) classifies three types of ecotourist.

FEATURE	The Rough Ecotourist	The Smooth Ecotourist	The Specialist Ecotourist
Age	Young - middle aged	Middle aged - old	Young - old
Travelling	Individually / in small groups	In groups	Individually
Organisation	Independent	Tour operated	independent and specialist tours
Budget	Low: cheap hotel/B&B, local/fast food. Uses buses	High: 3* and 5* hotels, luxury cafes, uses taxis	Mid-High: Cheap 3* hotels, mid-lux cafes, as necessary
Type of Tourism	Sport and adventure	Nature and safari	Scientific investigation / hobby pursuit

(Mowforth, 1993)

TABLE 2.1: Ecotourist Classification

Examples of both Rough and Smooth ecotourists are found in Khövsgöl (the Explorers and the 'Bankers'), and also the Specialist ecotourists - represented by the scientific expeditions (Discovery Expeditions).

[1] Where geoecology is defined as encompassing physical earth processes, the natural ecosystem and

NON-SPECIFIC, SELL-ORIENTED PHRASES

Eco-Sell Oriented

- we just offer the best, most affordable and largest variety of "classic and unusual" eco-tourism one can find, anywhere
- rain forest ecology tours
- budget travel to "untouristed" destinations
- areas generally neglected by the teeming tourist masses
- destinations untouched by mass tourism
- off the beaten track

Generic Language

- environmental awareness, self-discovery and personal exchange with exotic cultures or enchanted adventures to classic destinations
- ecologically sensitive
- cross cultural focus
- environmentally friendly
- sensitive to both the physical environment an to local culture
- spirited adventures for the responsible traveller
- sustainable ecological development
- people conscious nature tourist
- nature travel

Science/Conservation Oriented

- one week volunteer work
- visit the world's natural environments while you help preserve them. Trip proceeds support environmental and cultural preservation
- some trips involve travellers in conservation projects
- scientific expeditions
- restoration projects
- tourist support jungle conservation and Peruvian children's foundation

Explanatory/Values Oriented

- small groups (8-10)
- maximum group size 12
- worker owned transport companies
- locally owned hotels
- gives 1% of profits to peace and environmental groups
- newsletters prior to departure and lectures throughout tour
- women and indigenous owned business
- supporting local economic development
- your guide is a naturalist, tour parties are small

SPECIFIC, VALUES-ORIENTED PHRASES

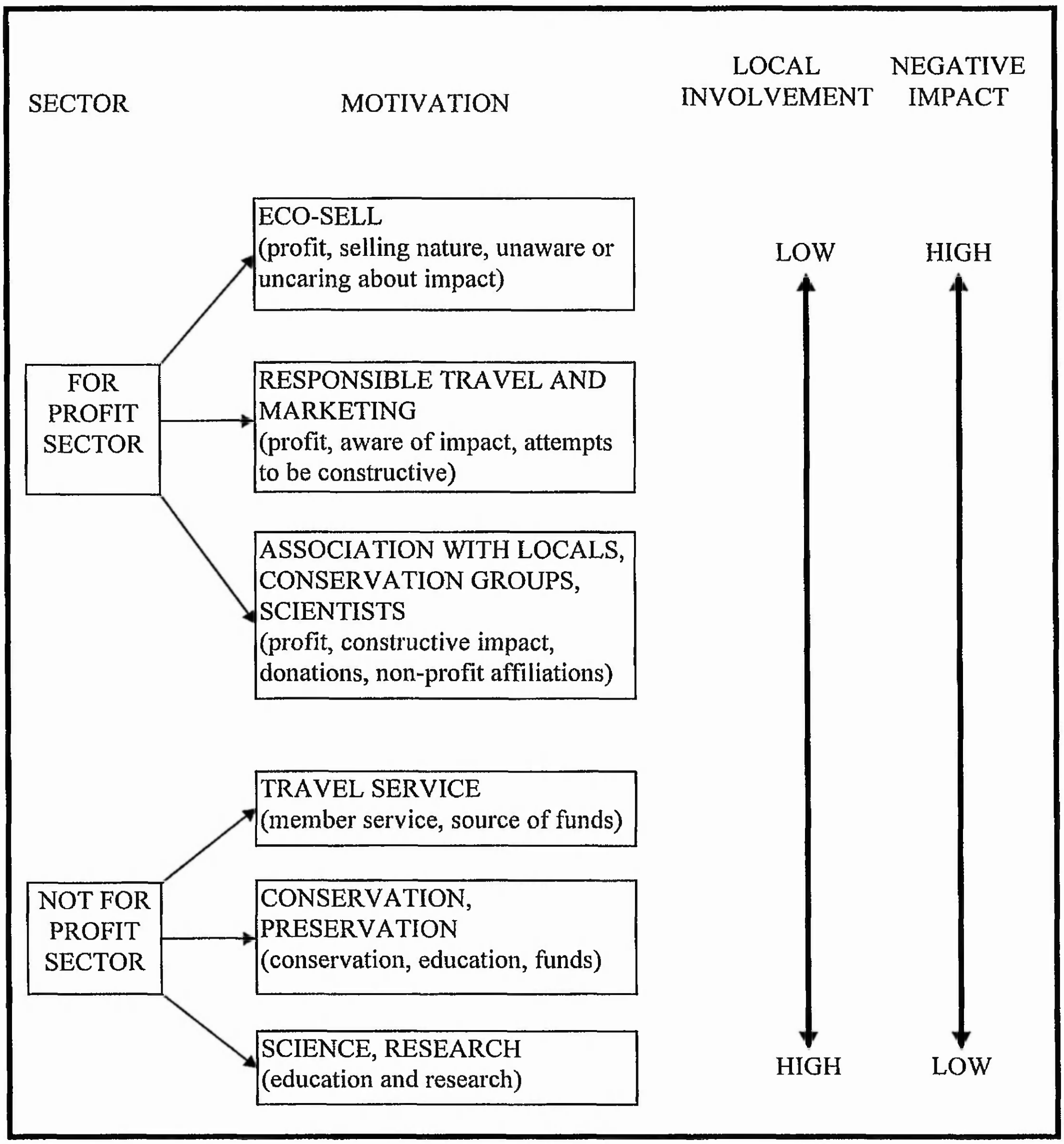
(Wight, 1993b)

FIGURE 2.6: Spectrum of Language Used to Market Ecotourism

Figure 2.7 illustrates local involvement and impacts, related to ecotourism motivation. In this instance, 'Negative Impact' is taken as some influence that has an undesired or detrimental effect upon the geoecology of a region. This figure illustrates the point that the **potential** for negative impacts maybe influenced by visitor motivation. Should such negative impacts be measurable or identified, then

man's influence as a functioning system (Gerrard, 1990).

those at the eco-sell end of the 'for profit' sector may place little emphasis upon their actions, whereas suppliers towards the science-research (Laarman & Perdue, 1989) end of the 'not for profit' sector would take more notice and be willing to go to greater lengths to avoid these impacts. Thus, it is not the amount of negative impacts, but the attitudes towards responsibility, determining a 'potential for impact' (Goodall, 1995). Impacts are discussed in more detail in Chapter 3.



(Wight, 1993a)

FIGURE 2.7 Segmentation Model of Ecotourism Suppliers, Motivation and Impact.

In Khövsgöl, these 'for profit' groups can be linked with Mowforth's (1993) tourist types. The 'Smooth Ecotourists' fall generally under the banner of the tour operators in the region which advertise using the 'eco-sell' approach. 'Specialist Ecotourists' are represented by such groups as Discovery Expeditions (Section 6.4.1), who promote active participation in a variety of conservation projects. 'Rough Ecotourists' may be thought of generally as the 'explorer' types, not attached to a particular tour operator, but who prefer to make their own travel arrangements within the region. These types of tourists are discouraged by the Khövsgöl National Park authorities, as they are viewed as 'uncontrolled' and having a negative impact upon the environment. However, they may have a much higher environmental awareness than the smooth ecotourists, and have a higher degree of interaction with local people due to their independence and close living relationship with the environment. Local people in Khövsgöl suggested that they had a closer relationship with these independent travellers who often tended to stop with them and participate in their activities – travelling by horse or bicycle (Chimgay, 1995).

Ecotourism may also be viewed in terms of supply and demand. It is as much a result of the infrastructure available for development and the particular kind of impact management practised at the site, as the tourists themselves and their motivations and perceptions of the host environment. There may be no attempt to inform the visitor of indigenous practices or the culture of local people (Place, 1991). Therefore the impact upon the social, economic and natural environment may be uncontrolled and undetermined (Lindberg, 1991).

Wight (1993a) outlines eight key principles underlying the concept of ecotourism. It should not degrade the resource and should be developed in an environmentally sound manner (suggesting that the environment is a priority). It should provide first-hand, participatory and enlightening experiences. There should be involvement in education among all parties, local communities, government, Non-Government Organisations (NGOs), industry and tourists, before, during and after the trip. There should be encouragement of all-party recognition of the intrinsic values of the resource, it should involve acceptance of the resource on its own terms, and in recognition of its limits, which involves **supply-oriented** management. It should promote understanding and involve partnerships between many players, which could include government, non-government organisations, industry, scientists and local people (both before and during operations). It should promote moral and ethical responsibilities and behaviours towards the natural and cultural environment by all players. There should be provision of long-term benefits to the resource, to the local community and to industry. Such benefits may be conservation, scientific, social, cultural, or economic.

Ecotourism then, carries the weight of association with phrases such as 'sustainability', 'responsibility', 'green', 'friendly' and 'sensitive'. In this respect, the term itself is loaded with benevolence, which conveys a misleading impression that all ecotourism is good - or further - good for the environment.

> "Ecotourism is not the automatic panacea for all tourism ills"
> (Cater, 1993:89)

The Mongolian government is marketing tourism to Khövsgöl as ecotourism, and classifying all visitors to that region as 'ecotourists'. No distinctions are made between the different types of tourists, although the policy of controlling visitors through regulations designed to encourage large groups - promotes 'smooth ecotourists' (Mowforth, 1993). Cater (1993:88) suggests that "there is a danger of assuming that the ecotourist is automatically an environmentally sensitive breed". The 'smooth ecotourists' tend to be made up of a mix of people, including international travellers, and business workers transplanted from Ulaanbaatar. The latter are not necessarily sympathetic to the environment, or aware of their impacts - but rather wish to experience the landscape.

2.3: Issues of Supply

2.3.1: Introduction

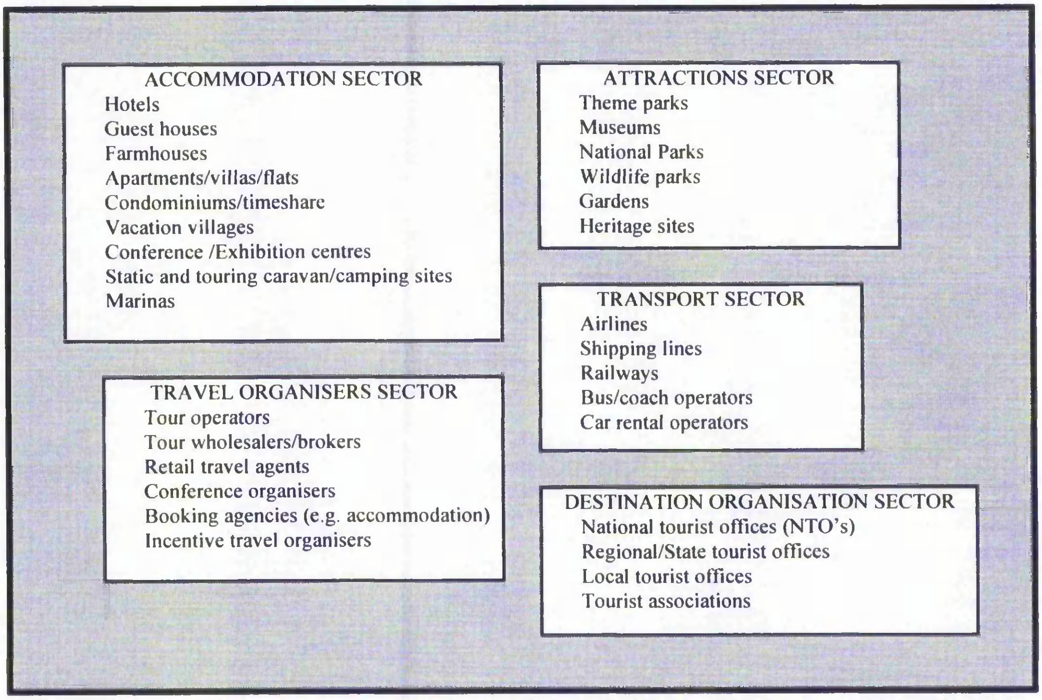
Tourism is a service, rather than merchandise. It cannot be inspected before it is bought; it is a speculative investment. Moreover, visitors are buying more than a collection of services such as airline seats, hotel rooms and meals. They are buying temporary use of a strange environment, culture and heritage of a region and other intangible benefits such as service, atmosphere and hospitality.

The tourism product represents a compendium of elements and may be understood on two different levels (Witt & Moutinho, 1995). Firstly, it may be regarded as a combination of all the service elements a visitor consumes from the time he or she leaves home, to the point of return. In this respect it is an idea or expectation, or some mental construct in the customer's mind at the point of sale. Secondly, it may be regarded as a collection of specific commodities such as accommodation, transport and attractions.

This research is concerned primarily with the latter level and the management of these specific services, along with the tourists themselves, in order to satisfy the multiple roles of the Khövsgöl National Park. However, it should be recognised that the mental construct in the customer's mind, both before and after the tourism experience, may be changed. Moreover, awareness of some aspects of the tourism product can be increased, therefore giving the tourist the benefit of a more interactive and fulfilling experience, which may in turn decrease negative impacts at the source.

2.3.2: The Tourism Product

Supply invariably means Attractions, Access, Amenities, and Ancillary services (Cooper *et al.* 1993). This section will consider the impacts of demand in terms of service provision. Figure 2.8 outlines these sectors.



(Middleton, 1988)

FIGURE 2.8: The Five Main Sectors of the Travel and Tourism Industry

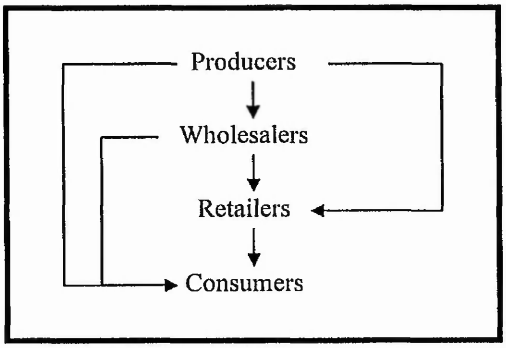
Tourism is a resource industry dependent upon the natural environment and cultural heritage of a region (Gee, *et al.*, 1989). In some areas it is the climate, in others, natural landforms or particular landscape that activities such as horseriding, mountain biking or mountaineering require to take place. Gunn (1994) suggests that attractions should 'entice, lure and stimulate interest in travel'; Khövsgöl's attractions are its National Park (owned by the government) and cultural heritage. These support tourism centralised around the lake - a source of pure water (although too cold for comfortable bathing and regulations restrict the amount of motorboat traffic). Also hot springs to the west of the lake attract tourists for health reasons.

Fishing, botany and birdwatching are also important activities supported by Khövsgöl's natural environment. In addition, the cultural resources of local people as nomadic pastoralists practising a unique way of life and their traditional hospitality enables close contact to be made by tourists.

Tourism infrastructure (access and amenities) are basic, ranging from traditional *gers* to more permanent wooden huts erected in a variety of styles. Sewage facilities are rudimentary; a hole in the ground over which some form of shelter is built. In Ulaanbaatar, tourism infrastructure is represented by more formal capital investment in the form of hotels catering for business workers, bankers and economists engaged in the restructuring of Mongolia's economy.

Accessibility of tourist attractions is a key factor in determining prosperity. Mongolia is beginning to compete for international tourists through the restructuring of its International airport. All foreign visitors are required to enter Mongolia by air or rail to Ulaanbaatar (Section 1.4.3) - thus, accessibility to Khövsgöl is restricted, and visitors must make the journey from Ulaanbaatar to Mörön by internal air transport (1.5 hours duration) or bus/jeep (24 hours duration) (Section 1.5.4). Within the park, accessibility is via jeep or horse. Jeep tracks extend partially around the perimeter of the lake, linking the populated regions along the west, to Hatgal in the south, then north to Hankh, and round to the population centres in the north-west. Sheer cliffs to the lakeshore prevent the north-west and west of the lake being joined by this route. In general, visitors are unable to hire transport independently, but instead hire transport and a driver.

The chain of distribution (Figure 2.9) illustrates the relationships between the elements of the supply hierarchy.



(Holloway, 1994)

FIGURE 2.9: Marketing Channels, or the Chain of Distribution

The airliners, transport operators and accommodation providers are the producers. These products can then be packaged by the tour operators (wholesalers) and supplied to travel agents (retailers), who have a direct link to tourists (consumers). In Mongolia, the wholesalers and retailers are often bypassed by independent travellers, who deal directly with the producers. For example, tourists linking up with local people at the airport are often contacted directly by taxi drivers (Figure 2.9).

Figure 2.10 describes the network of sectors in a tourism industry, in terms of the chain of distribution. The links which are specifically representative of the chain in Mongolia's tourism industry are shown in Figure 2.11. Within Khövsgöl, limited public sector support services are present or functional (although a visitor centre is being constructed). Most services are provided by the private sector, motivated mainly by profit.

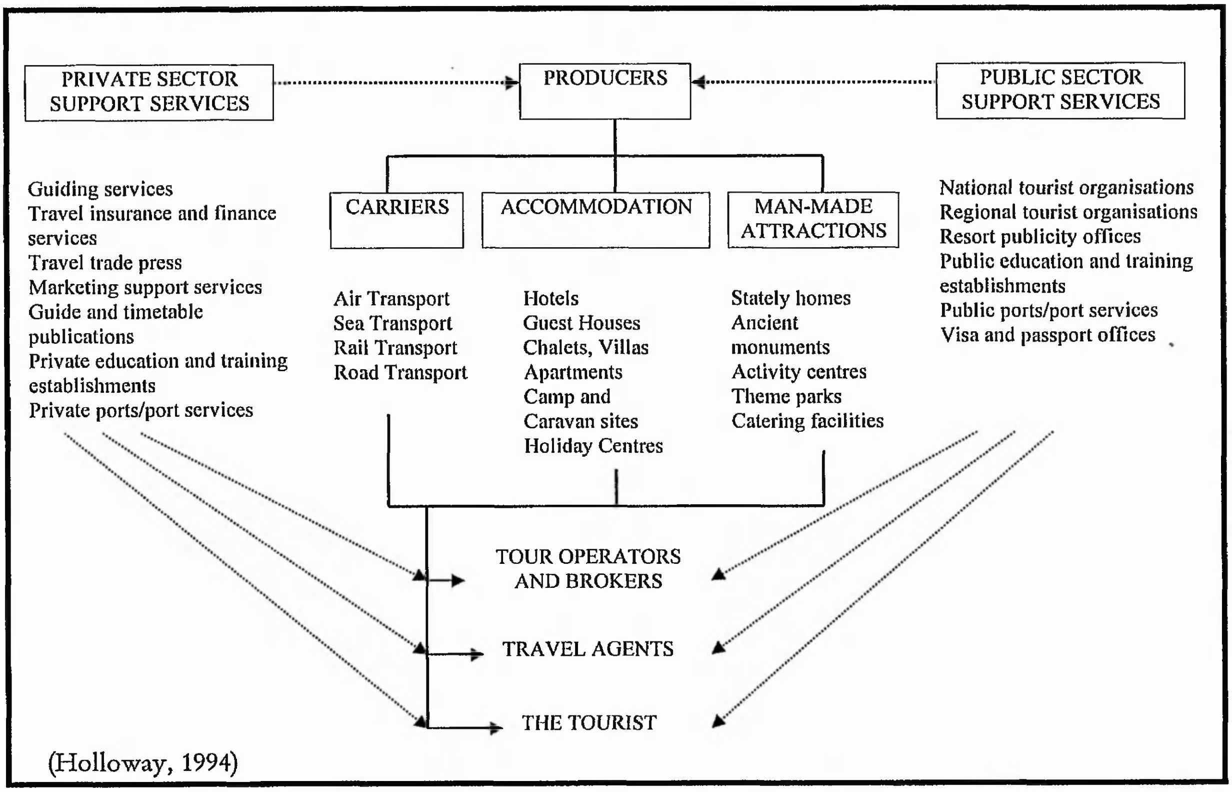
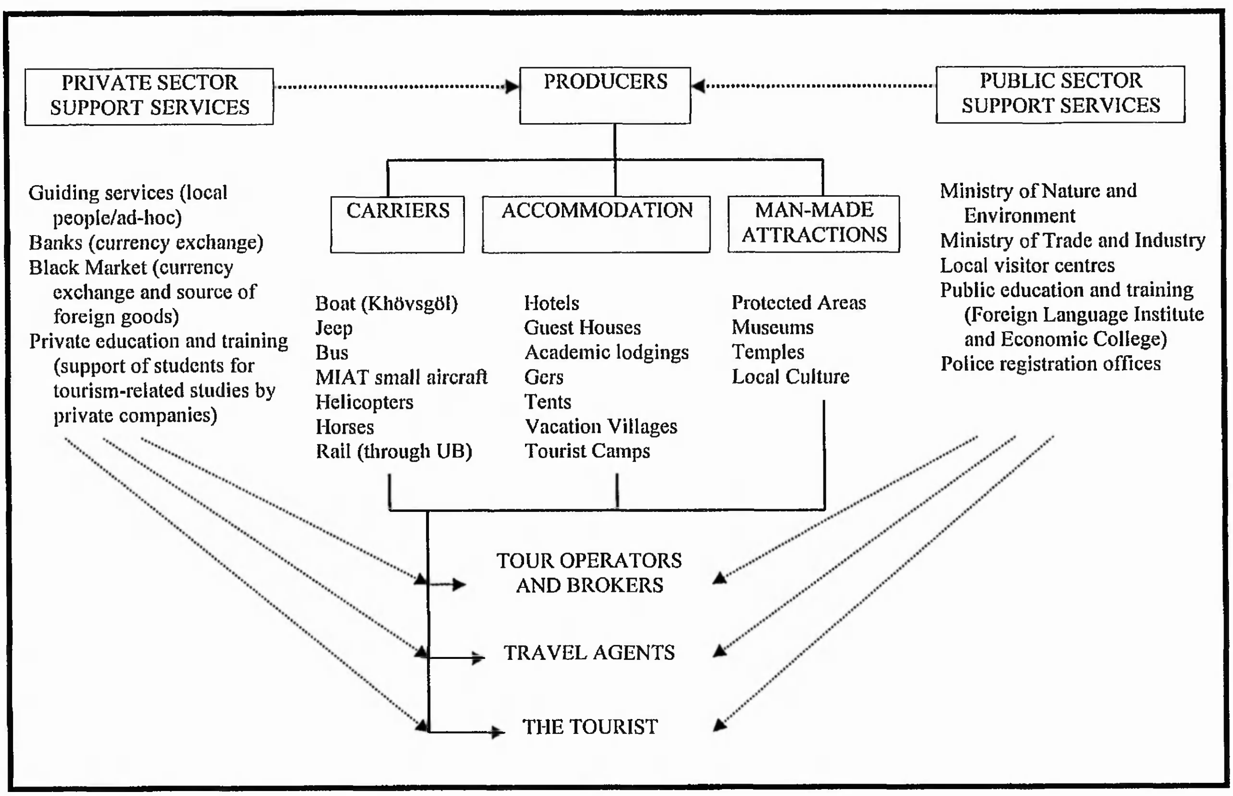


FIGURE 2.10: The Network of Sectors in a Tourism Industry



(Modified from Holloway, 1994)

FIGURE 2.11: The Network of Sectors in Mongolia's Tourism Industry

Within the MNE, the management hierarchy (Figure 2.13) responsible for the maintenance of Khövsgöl National Park works as a closed system, where information is passed between adjacent levels only. The MNE works with the UN Biodiversity team in terms of the provision of some local enterprise support and in co-ordinating the collation of biodiversity information across Mongolia's Protected Areas. However, there is little – if any – communication between the MNE and the local public governing administration (Section 7.2.4).

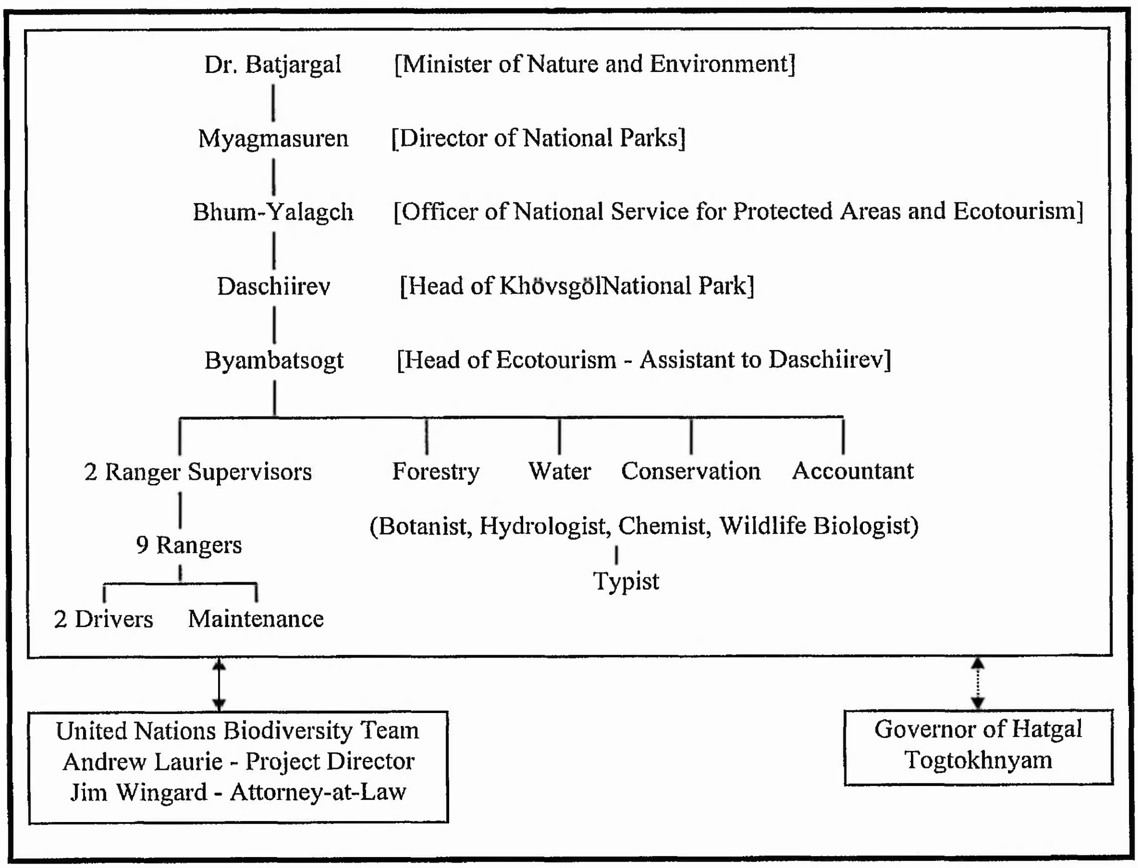


FIGURE 2.12: Management Structure during 1995

In summary, this discussion has considered aspects of supply and demand with respect to Mongolia's tourism industry. However, the result of the provision of tourism infrastructure leads to impacts upon both the environmental and socio-cultural aspects of the landscape. These impacts upon the landscape are often difficult to analyse and predict, since they depend upon so many factors. Without a strong management and monitoring strategy, Khövsgöl National Park can only react in retrospect to degradation of the environment. A GIS would allow managers to produce models for prediction of likely degradation, given the specific environmental and recreational patterns in the Park, but data needs to be input which illustrates the types and amounts of activities in any given area. In this way, managers can make informed decision about the sensitivity of different areas of the Park to certain combinations of activities. Chapter 3 addresses these impacts in detail, in response to the supply and demand construct and defines the types of activities currently undertaken in Khövsgöl.

Chapter Three

IMPACTS OF TOURISM

Chapter Three
IMPACTS OF TOURISM

3.1 Introduction

It has already been shown (Section 2.3.2) that the chain of distribution links together different features of the environmental and socio-cultural landscape in order to supply the visitor experience. These features will then undergo some form of impact (either positive or negative) from the changes in geoecology resulting from the influx of visitors.

Tourism exerts a feedback mechanism whereby the act of visiting a site may actively alter that very landscape which originally attracted those visitors. In this event, the landscape will alter and either visitor numbers or visitor types (Section 2.2.4) will change. This is why it is so important to have a programme of impact management in place, whereby the characteristics of visitors (either numbers or types) are regulated in order that tourism itself should be sustaining.

It is argued that impacts result from supply infrastructure and the failure of management in response to demand. It is important for managers to be able to model these potential impacts, in order to determine suitable planning strategies for Khövsgöl. In order to describe the nature of impacts, it is necessary to examine how they occur and define particular management strategies that might be used to control them.

Impacts themselves are a function of features of the destination, tourism and tourist characteristics, tempered by the infrastructure available to control and manage them (Figure 3.1). The following discussion will analyse environmental and socio-cultural impacts in terms of recreation activities. Management techniques will be explored in Chapter 4.

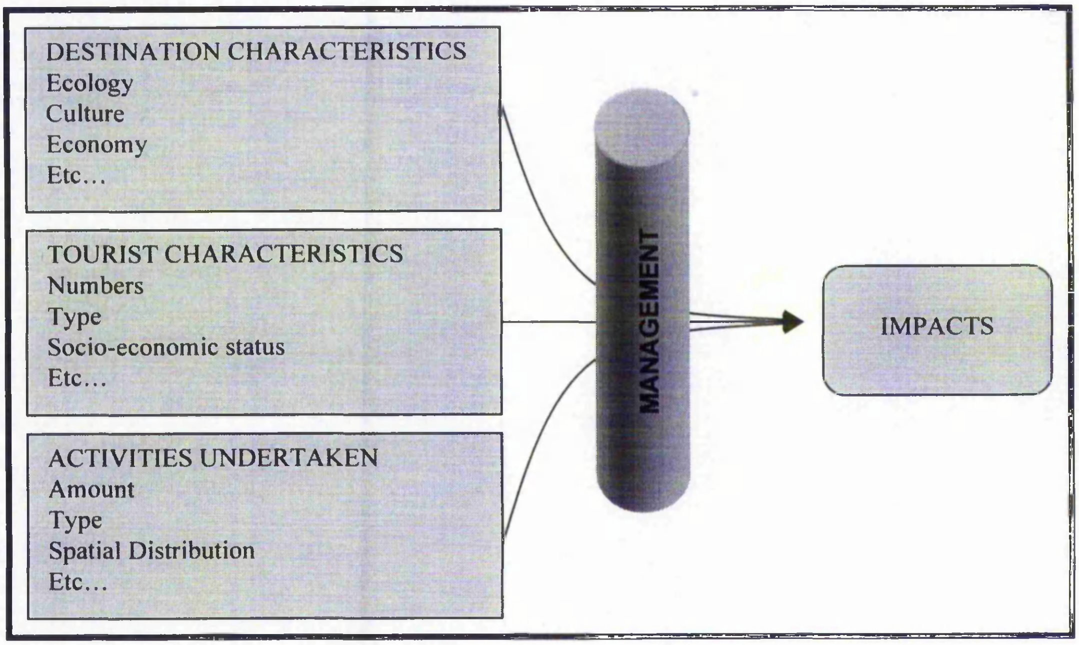


FIGURE 3.1: Impacts as a Function of Destination, Tourists and Management

3.2: Environmental Impacts

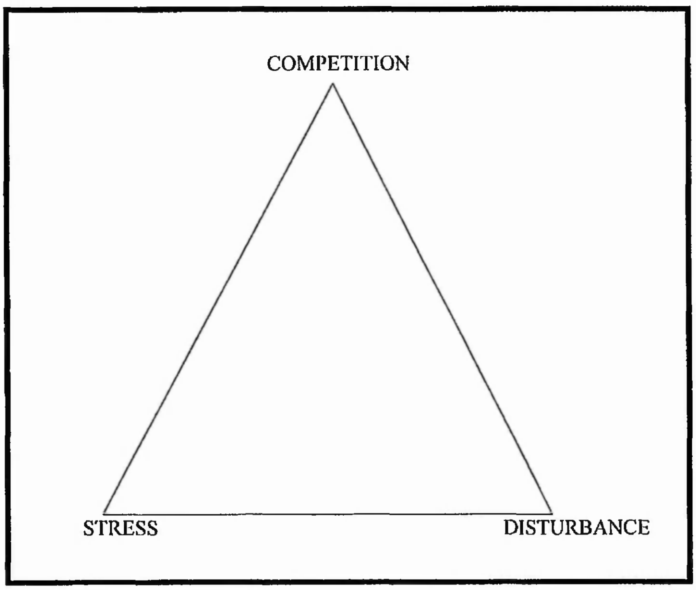
It is beyond the scope of this thesis to review environmental impacts across all climatic gradients and so the discussion has been restricted to those conditions found in mountainous areas. The compression of latitudinally extensive patterns of vegetation into narrowed bands on mountains provides changes in climatic conditions that are immediately obvious, even over short distances. Hanawalt & Whittaker (1976) suggest several factors that change with an increase in altitude.

The steepness of the slope may maintain mountain soils in a less mature state than on flat land, mean air temperatures decrease with increasing altitude and soil organic matter seems to decrease with increasing altitude. The latter point is a common feature, due to the lower rates of litter decay at high altitudes, since the cold prohibits the efficient breakdown of organic material by soil decomposers such as bacteria and fungi. Thus, the mountainous regions around Khövsgöl are expected to support immature soils, with little organic matter at higher altitudes. At 1,700m (lake level) organic matter increases, as a number of regions are damp pastures. Additionally, these areas are often supplemented with animal dung as part of pasture husbandry (Section 7.2.6).

Variations in the air temperature throughout the year affect the fundamental physiology of the plants, influencing the opening of buds, the growth of leaves and timing of flowering and fruiting. Most important are the fluctuations in ground temperature. The soil mitigates extremes of temperature allowing the survival of many plants. Where there is little or no soil, the effects of the solar radiation are much more intense.

From experiments conducted on Niwot Ridge in Colorado, USA; Billings & Bliss (1959) conclude that snowcover and soil moisture are the primary determinants of plant community distribution. The slope aspect affects ambient atmospheric conditions, moisture and temperature; via direct control over wind and insolation. The variations in snow depth and timing of snowmelt cause vegetational gradients. Thus, the drier and colder north-facing slopes support hardier plant species than the wetter south-facing slopes. Those areas which have snow melting first have greater productivity (and therefore more free water).

Khövsgöl exhibits vegetational characteristics typical of montane flora at the lake shore (Ives & Barry, 1974), extending to Larch, Pine and Beech forest. The treeline occurs at around 2,300m and then gives way to scree slopes and tufted alpine cryophytes[1] (Price, 1986). Vegetational composition is affected largely by grazing in the lowlands, and the wet meadows which occur around the lake shore (Section 1.5.1).



(Adapted from Grime, 1979)

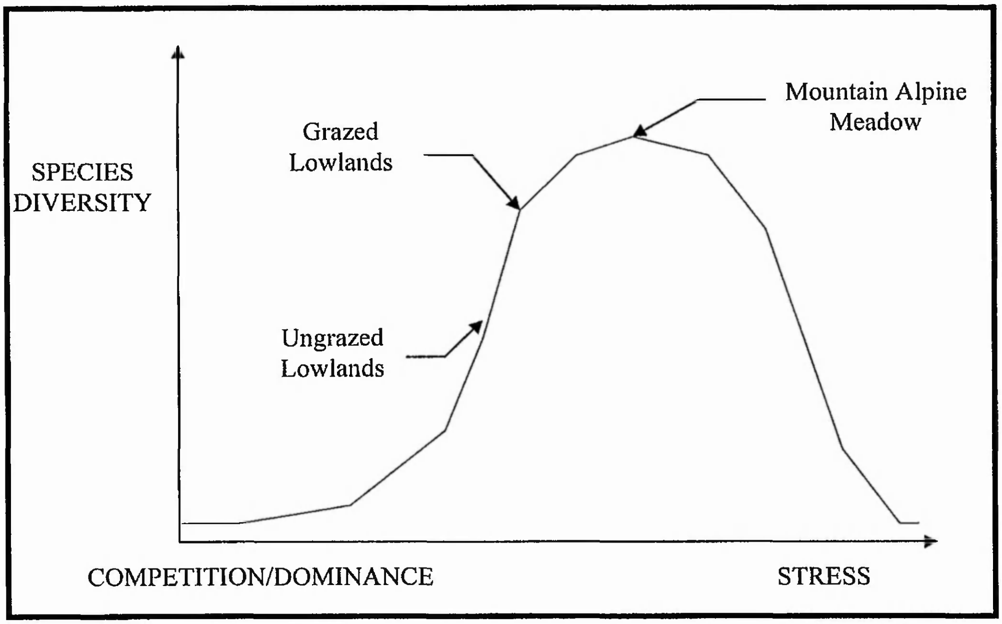
FIGURE 3.2: Grime's Plant Survival Strategy Theory

Several factors affect the way in which vegetational communities are composed. Grime (1979) suggested that there were three "extreme environmental factors" which influence strategies for survival. Plants would possess attributes which would enable them to adapt to one or more of these conditions. Figure 3.2 describes a triangle within which it is postulated that each species of plant could be represented.

Plants which exhibit the characteristics of **competitors** are generally tall, have a high rate of growth, and tend to shade other plants out, as they are able to take advantage of better environmental conditions. **Stress tolerators** tend to be stunted, grow very slowly and are able to tolerate extreme physiological stress. However, should conditions improve, they are unable to take advantage of increased nutrient availability (Holmes, 1993). **Disturbance tolerators** are able to withstand disturbance of the ground, for example, through animal trampling. They are usually small in stature, but grow rapidly.

From this, a graph was produced (Figure 3.3) where the y-axis represents species diversity, and the x-axis the transition from a competitive (dominant) environment with favourable conditions for growth, to one of stress. This curve illustrates that although an increase in stress in one vegetative environment may produce an increase in diversity, for example along the edges of tracks; an increase in stress in other environments may produce a relative decline in diversity (Magurran, 1988). Primarily, these regions would be in higher altitudes and latitudes, comprising the most rare and specialised organisms (Rikhari *et al.*, 1993).

[1] Cryophytes – plants tolerant of cold.



(Adapted from Grime, 1979)

FIGURE 3.3: Species Diversity in Relation to Stress

It is not sufficient to generalise that an increase in stress would lead to greater diversification of plantlife (as is commonly assumed), only that a **change** in stress will cause a **change** in diversity, thus changing the character of that region of the park. Thus, it cannot necessarily be generalised that an increase in stress in the Khövsgöl area would increase species diversity. Conversely, the removal of stress or disturbance allows the influx of larger 'competitors' and therefore prompts a further change in the ecology (a decrease in species diversity). Disruption to grazing by changes in landuse, such as the construction of tourist camps, will ultimately have an impact upon the vegetational composition of the landscape. Indirectly this may also exert short-term changes in the lake chemistry, as changing vegetation would alter the chemical composition of water runoff, making it contain more or less organic residues. Short-term algal blooms are already a feature of the lake shoreline (Section 1.5.7), but it is unknown whether this is a recent phenomenon, or part of a long-term process.

Stress may be caused primarily by environmental conditions. Table 3.1 gives the changes in morphology and physiology that may occur under conditions of moisture and oxygen stress. Oxygen stress can be caused by compaction of the soil, through trampling by animals or vehicles. Plants grow stunted, smaller and at a slower rate, and do not reproduce as well. This means that there is less biomass produced for livestock, and the overall quality of the pasture can decrease over a number of years. Symptoms of moisture stress, possibly caused as a result of changing soil conditions, include less stored starch in tissues, and more woody, less tender shoots. Thus, livestock feed on generally poorer quality vegetation.

Growing Under Conditions of Oxygen Stress

Morphologic Characteristics	Physiologic Characteristics
[1] Root cell walls abnormally thin [2] Roots shorter [3] Root system becomes shallower [4] Shoots occupy less space [5] Leaf area reduced	[1] Permeability decreased [2] Rate of water and nutrient absorption decreased [3] Rate of transpiration reduced [4] Rate of respiration increased [5] Foliage discoloured [6] Reproduction delayed or repressed [7] Shoot growth terminated earlier [8] Susceptibility to root diseases increased

Growing under Conditions of Moisture Stress

Morphologic Characteristics	Physiologic Characteristics
[1] Shoot size reduced [2] Root system size reduced [3] Leaf blades smaller but thicker [4] Cuticle and cell walls thicker [5] Tissue more heavily lignified	[1] Starch to sugar ratio lower [2] Unit area rates of transpiration [3] Permeability increased [4] Resistance to wilting greater [5] Flowering and fruiting earlier

(Daubenmire, 1974 in Kuss *et. al.*, 1990:42)

TABLE 3.1: Differences in Morphologic and Physiologic Characteristics of Plants Growing in Adverse Conditions

Stress also affects plant height, causing stunting (Sedelnekov, 1988; Billings & Mooney, 1968; Fielding, 1994). Changes in stress will affect species composition, including forbes to grasses. This is further complicated by the patterns of grazing exhibited by different animals. Harper *et. al.* (1996) notes the main selective pressures upon grassland which include selection against palatable plants in favour of less palatable species; selection of species that can withstand grazing, in particular, grasses; selection of species in heavily grazed areas by form (prostrate rosettes are difficult to graze) and selection in favour of those plants resistant to trampling. Recolonisation of vegetation is slow due to the short growing season and low temperatures. Trees are given little opportunity to recolonise in the main, due to seedling mortality from grazing animals. Removal of trees may lead to instability of soil in that area, and a sediment influx to the lake (Section 1.5.7).

An increase in stress may also be caused by trampling and grazing, altering physical characteristics of the soil and changing the nutrient and moisture availability. Additionally, changes in soil characteristics make some soils more resistant to compaction, or more erodible, and it is important to take these mechanical qualities into account when determining the types of recreation likely to be taking place.

Changes in patterns of grazing, as could be experienced with tourism developments along the lake shore, would change the structure of the sward; in particular its height and also the presence or absence of bare ground (Harper *et. al.*, 1996). These factors would in turn reflect within both invertebrate and vertebrate fauna of the locality. Small mammals and invertebrates will be affected by the changes in microclimate and this will produce a follow-on effect for predative macrofauna such as birdlife.

The most likely pollutants resulting from human activity include an increase in sedimentation as land adjacent to the shore is damaged. Removal or changes in vegetation allow bare patches of soil to originate, causing soil runoff during the autumn rainy period. Addition of nutrients to the lake, through animal and human wastes, increases algal and bacterial growth (Lockwood, 1976 and Callely *et al.*, 1977), thus making less oxygen available to fish and macroinvertebrates and changing species composition (Mason, 1991), decreasing the water quality and rendering it less amenable to recreational use. Subsequently, the image of the lake as a repository of pure water would be compromised and affect drinking supplies as well as the genetic bank of unique organisms found nowhere else in the world. As Khövsgöl is part of the watershed for Lake Baikal, this would also affect water quality elsewhere.

Some nutrient run-off is occurring into Khövsgöl, as algal blooms are a feature of the lake shore during the summer months. In some cases, this could be through animal faeces where animals habitually graze close to the lake edge. The most likely forms of human activity to effect Khövsgöl will be through the faecal contamination of water (where visitors use inappropriate sanitary facilities located too close to the lake shore) and the introduction of detergents to the water (where water used for washing is disposed of in an inappropriate manner). Detergents break down the surface water tension, an important part of the hydrological environment for many invertebrates (Lockwood, 1976). There are National Park guidelines about the location of sanitary facilities and these are strictly adhered to, with regular visits by National Park rangers to tourist camps. In one case, recent development of a tourist camp had to be relocated due to the situation of the original facilities too close to the lake (Chimgay, 1995).

It is not possible to set a quantifiable figure for the **amount** of human activity or activity types that will lead to an effect upon the water quality, even if acceptable water quality was defined (Extance, 1987). Many effects may only be realised some time after the activity has taken place, for example, pollutants may be held up in the groundwater around the lake shore for a period of time, before being released into the water. Daschiirev (1995) related that a petrol spillage at Janghai tourist camp which occurred before 1991, is still uncontained and leaking into the lake each year.

Additionally, there are potential future threats related to the release of petrochemical pollutants leaking from submerged vehicles that fell through the winter ice. Jambal (1996) estimates that there may be forty such vehicles in the lake. Petrol tankers crossing the lake ice in the winter months were common up until the designation of the region as a National Park and the trade restrictions across the Russian borders. Recent talks are going ahead to try to reinstate this practice as border trade with Russia increases once again (Gruys, 1997).

Clearly, sustained use of a single area for tourism activity will concentrate impacts and the potential for polluting events in that region. This may lead to particular local variations in water quality that will eventually become dispersed towards Hatgal to the south. There is currently no evidence to suggest contamination of fish stocks by heavy metals and water quality is of immense importance to the National Park authorities. Motor vehicles on the lake are heavily restricted.

In addition, the proposed hydro-electric powerstation (HEP) planned for construction along the river Delger to the south of Hatgal may increase sedimentation upriver and interfere with fish migration patterns. However, a great emphasis is placed upon the quality of Khövsgöl's water by local authorities and new developments are strictly controlled (Chapter 1).

It is very important to recognise that the spatial variation of roads or tracks can make significant changes to the region's floral community. This in turn leads to a change in invertebrate fauna and thus the distribution of macrofauna upon which they prey. Birdlife is a potentially very important aspect of Khövsgöl's touristic attractiveness and changes in the distribution of animals have already been noted, with particular regard to Bear (Bennett, 1995) and Ibex (Harper *et. al.*, 1996). Although it is suspected that tourism has not directly played a part in the relocation of these animals (since there is very little tourism activity at the current time), it may be a product of increased human activity in the area, following the collapse of the industrial heart of Hatgal (Section 1.5.6) and urban to rural migration of previously settled people, back to a nomadic lifestyle.

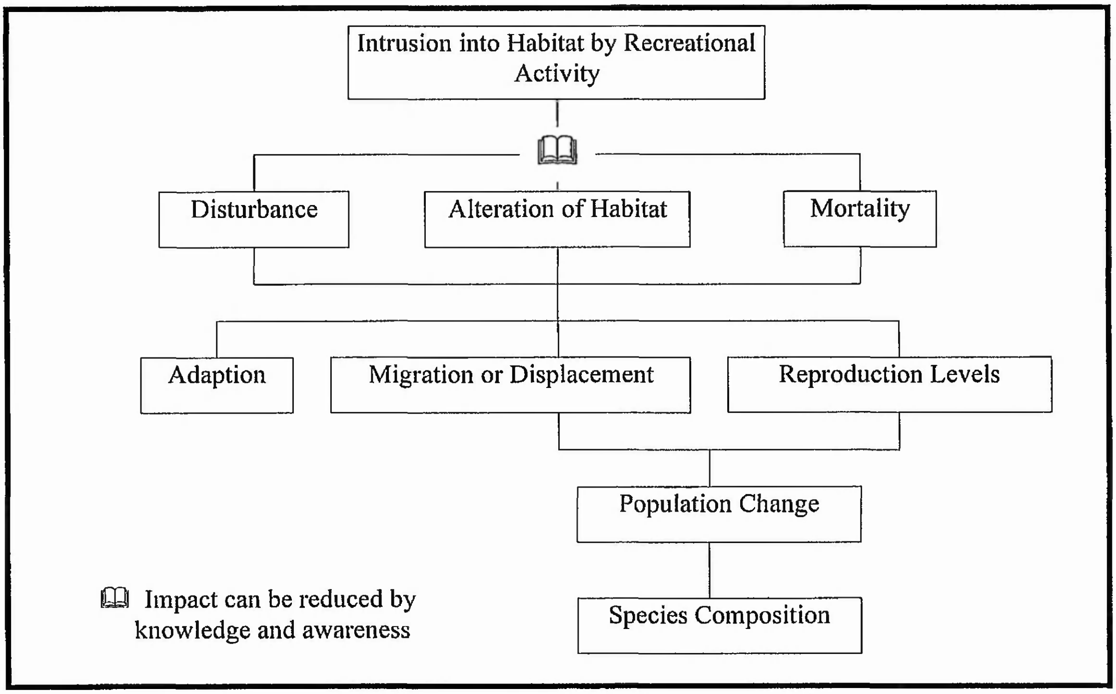
There is some evidence to suggest that hunting by local people is a source of winter food (Fielding, 1995) and therefore recent changes in animal distribution may not be strongly linked with tourism, but with changes taking place in the National Park as a whole (thus the increase in the numbers of wolves has occurred due to the ban on hunting). Harper *et. al.* (1996) refutes this in the case of Ibex, due to their shy nature and small stature. However, many animals could have been at risk from the increase in wolf numbers (Section 8.2.1).

The character of the land is to some extent moulded by the actions of local people, who seek to ensure a good quality yield for their livestock, to last them through the winter. Herders are able to distinguish between many types of pasture and particular animals that best maintain the productivity of the land (Fernandez-Gimenez, 1993). Local people classify pasture resources by season, and also include resource and emergency areas. In summer; high density, lower quality pasture is utilised, whereas in winter; lower-density, high quality pasture is used. Mongolian herders classify grasses as either 'thick' which comprise sedges and poor quality fodder suitable for cattle, yak and horses; and 'thin' which is usually found on the hillslopes, and more useful for small stock such as sheep. This segregation of livestock encourages a change in the floristic composition of the lowlands and uplands, as each species graze the land in a particular manner. In Khövsgöl, not all households make this distinction and herd all their animals together.

The choice of summer camp is based upon ecological criteria, including the availability of water for livestock and domestic use, and the availability of optimal forage types, including both 'thick' and 'thin' grasses (Fernandez-Gimenez, 1993), but is also a cultural one, where land is 'traditionally' used by certain families.

Overall, there are two distinct processes that are occurring in the Khövsgöl region. The first has occurred since the definition of the region as a National Park, and has produced changes in the ecology of the region resulting from restrictions placed on hunting and the changes in the rules for cutting wood. This process is considered a 'natural' part of the evolution of the National Park and is necessary for the move to equilibrium of local people and how their cultural practices interact with the landscape. The aim of this research is not to change or affect these processes, but to manage tourism.

The second transformation that is occurring is due to the influx of tourism into the region, and is concerned with the impacts of different recreational activities, apart from traditional landuse undertaken by local people. This second process will now be discussed more fully with respect to the effects of tourists. Figure 3.4 illustrates impact types upon ecology. It is particularly important to note that knowledge and awareness of the recreational activities by participants can help to reduce their impacts upon the floral and faunal (Duffus & Dearden, 1990) communities, and ultimately the species composition of the Park.



(Modified from Kuss, *et. al.*, 1990:164 after Wall & Wright, 1977)

FIGURE 3.4: Ecological Impacts of Recreation

Bell & Bliss (1973) in a disturbance study conducted in the Olympic National Park in the USA, found that lines that were walked 100 times per day were visible after only one day while lines that were walked five times daily showed only faint paths after four weeks. During four days rest, the plants returned almost to normal if trampled only slightly, but there was little recovery of the 100 times per day group. Additionally, with heavy trampling, the plant cover was reduced by 95-98 percent, and annual production by 97-98 percent. The paths remained visible for one year after trampling of 300-1,200 passes, which means that uncontrolled tourism may make visible impacts upon the environment and also change the species distribution. Plant cover was reduced to 2-5 percent of that of the undisturbed areas where walking had taken place. The greatest proportion of damage was with the first passes, as the most delicate plants disappear first. Thus, light walking over temporary trails allows vegetation to recover, but a permanent site results in more intense stresses, related to soil compaction and destruction of the upper vegetative layer.

This can be summarised in Table 3.2, where specific activities are linked to time estimates for the restoration of the landscape. Some of these disturbances are acceptable in Khövsgöl, as they form part of the traditional use of the landscape - examples of this would be horse tracks, and the main road that circumnavigates the lake. However, tourist-generated disturbances such as tracks into wilderness areas (Cook, 1988) may affect the landscape quality for other tourists (Section 3.3).

Area	Time Estimate
Single track by human with sandals	1-3 years
Single track by human with lug-soled boots *(problem in wilderness areas)*	3+ years
Single track by horse *(accepted part of the landscape)*	5+ years
4x4 or heavy vehicle track on stable flat	20-40 years
Well-used cattle trail	50+ years
Well-used dirt road *(part of the route around the lake)*	100+ years
Return of lichens to a large disturbance	100+ years
Full development of lichens	300 years
Well-used road with wind deflation *(Most roads in Mongolia)*	indefinite
Destabilisation of a lichen/moss-covered dune	?

(Kuss, *et. al.*, 1990:30 after Reid, 1979)

TABLE 3.2: Time Estimates for Restoration of Disturbed Areas

Summer (1980) identifies the biophysical factors that affect how much impact horse and hiker trekking have on the environment. These include the trail position in the landform, the parent geological material, the soil texture and organic content, the rockiness and stoniness and drainage class of the soil, and the vegetative characteristics. Overall, horses produce a greater trampling effect which is exacerbated in wet areas. Local people contribute to this by riding their animals across wet meadows bordering the lake, rather than riding along the road. Where horse trails are present, these are utilised, and trails tend to build up along the marshlands as they dry out in mid-July. In dry pastures, horses tend to reduce soil compaction, with a loosening effect of their hooves. Trails tend to be influenced by the surrounding landscape in that they will be wider in pasture than forests due to the screening effect of the trees. Table 3.3 compares the impacts of different forms of transport upon the environment. Each of these modes of transport is functional in Khövsgöl to some extent and impacts may be moderated to some degree by awareness (through education) of their implications (Edington & Edington, 1986).

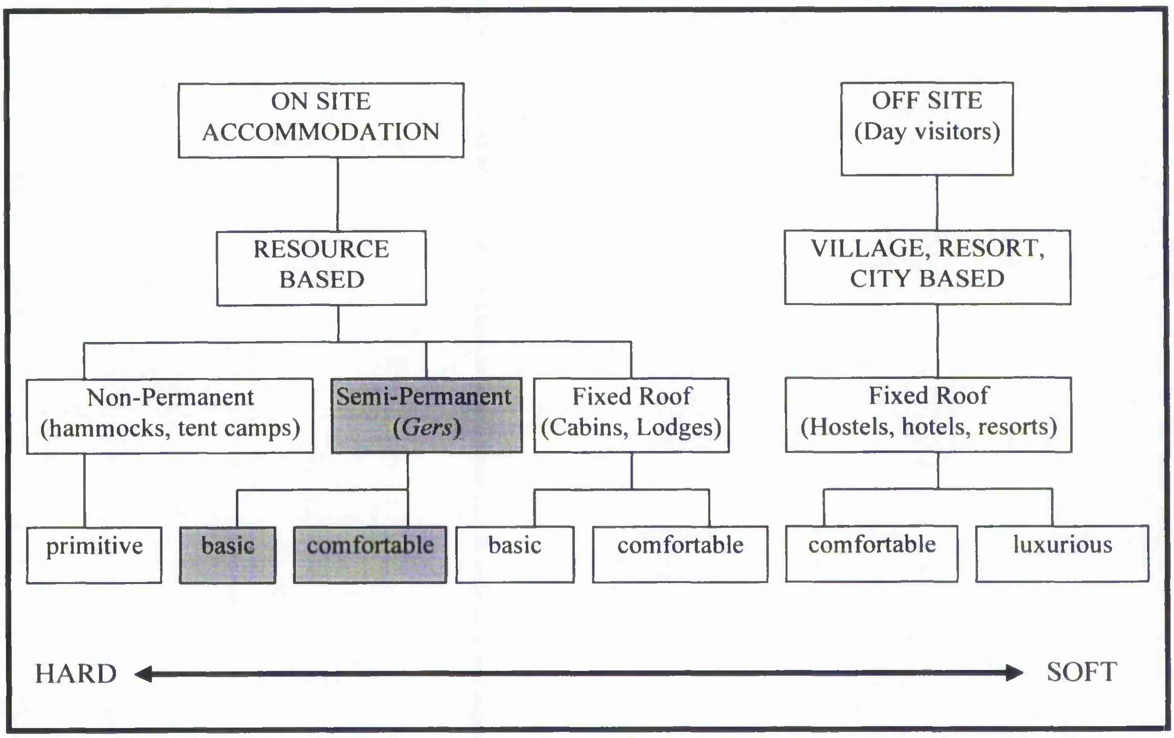
Means of transport / travel	Vegetation clearance or damage	Soil erosion or compaction	Wildlife disturbance, shooting or habitat destruction	Solid wastes	Water pollution	Air pollution	Noise	Increased Fire Risk	Weeds and Fungi
Light planes, helicopters	Airstrips only	Airstrips only	Depends on speed altitude, frequency of flights	Empty fuel drums at remote strips	-	-	Loud but intermittent	Little or none	Airstrips only
Bus or car on road	Roads and verges cleared	Compaction and erosion on unsealed roads ⊗	Noise depends on traffic density, roads can act as barriers, road kills	Litter 🕮 ⊗	Petroleum residues in runoff from roads	Exhaust fumes	:Line source volume depends on traffic density	Sparks, cigarette butts 🕮	Along road verges
Car or 4WD on tracks	Tracks cleared, tend to be widened and new tracks cut	Dust, gully erosion and compaction widespread ⊗	Road kills, noise, shooting 🕮	Litter 🕮	Turbid runoff	Exhaust fumes	As above	Sparks, butts, 🕮	Along track verges
ORV's off-track	Severe and extensive vegetation damage	Erosion widespread depends on terrain and soil type	Widespread noise, disturbance. ORV's used for shooting	Litter, human wastes 🕮	Campsites only, bacteria soap	Exhaust fumes	Major impact since ORV's can enter otherwise quiet areas	Sparks, butts, campfires 🕮	Spread on tyres
Mountain bikes	Less severe than ORV's	Localised in heavy use areas	Disturbance in heavy use areas	Litter, human wastes 🕮	Campsites only; bacteria, soap 🕮	None	Voices only	Butts, campfires 🕮	Spread on tyres
Horses	Trampling on horse trails	Localised trails and holding paddocks	Minimal unless riders rowdy	Horse manure	Nutrients bacteria downstream of holding paddocks	None unless very crowded	Voices only	Butts, campfires 🕮	Spread in fodder if carried
Hiking	Trampling on heavily used trails	Localised on heavily used	Generally minimal	Human wastes	Campsites only, bacteria, soap 🕮	None	Voices only	Butts, campfires 🕮	minimal on boots and socks
Power boats	Campsites, shoreline and aquatic vegetation	N/A	Noise, fishing and shooting 🕮	Garbage at campsites, jetsam 🕮	Fuel residues, nutrients, bacteria antifouling paints	Exhaust fumes	Engine noise	Campsites only 🕮	Campsites only
Unpowered watercraft	Generally none	N/A	Fishing only	Garbage and jetsam 🕮	Bacteria, soap 🕮	None	Voices only	Campsites only 🕮	Campsites only

⊗ Already a problem
🕮 Could be alleviated by education

(Adapted from Buckley & Pannell, 1990)

TABLE 3.3: Environmental Impacts of Transport and Travel

In addition to the impacts generated as a result of different recreational activities, there are also impacts upon the environment from the types of accommodation and services that tourists require. Figure 3.5 suggests a typology for accommodation based upon a scale of 'luxury' from hard (campsite) to soft (hotels). Present accommodation in Khövsgöl falls into the onsite category. Independent travellers utilise tents on small non-permanent sites, whereas groups utilise fixed-roof cabins, either semi-permanent *gers*, or stylised wooden gers with fixed roofs in a camp complex.



(Modified from Wight, 1993a)

FIGURE 3.5: Ecotourism Accommodation Spectrum

Table 3.4 illustrates some of the environmental impacts of different types of accommodation. Permanent sites such as Toilgot (Purvdorj's camp, Section 1.5.4), cause permanent environmental changes in the immediate vicinity, and there is evidence of resource-stripping from around the locality in terms of wood removal and trampling (Farrell & Runyan, 1991). These camps serve as a focus or 'honeypot' for tourist activities, and as such are themselves subject to disposal problems, particularly regarding organic effluents from food preparation and human wastes (Jeffries & Mills, 1990).

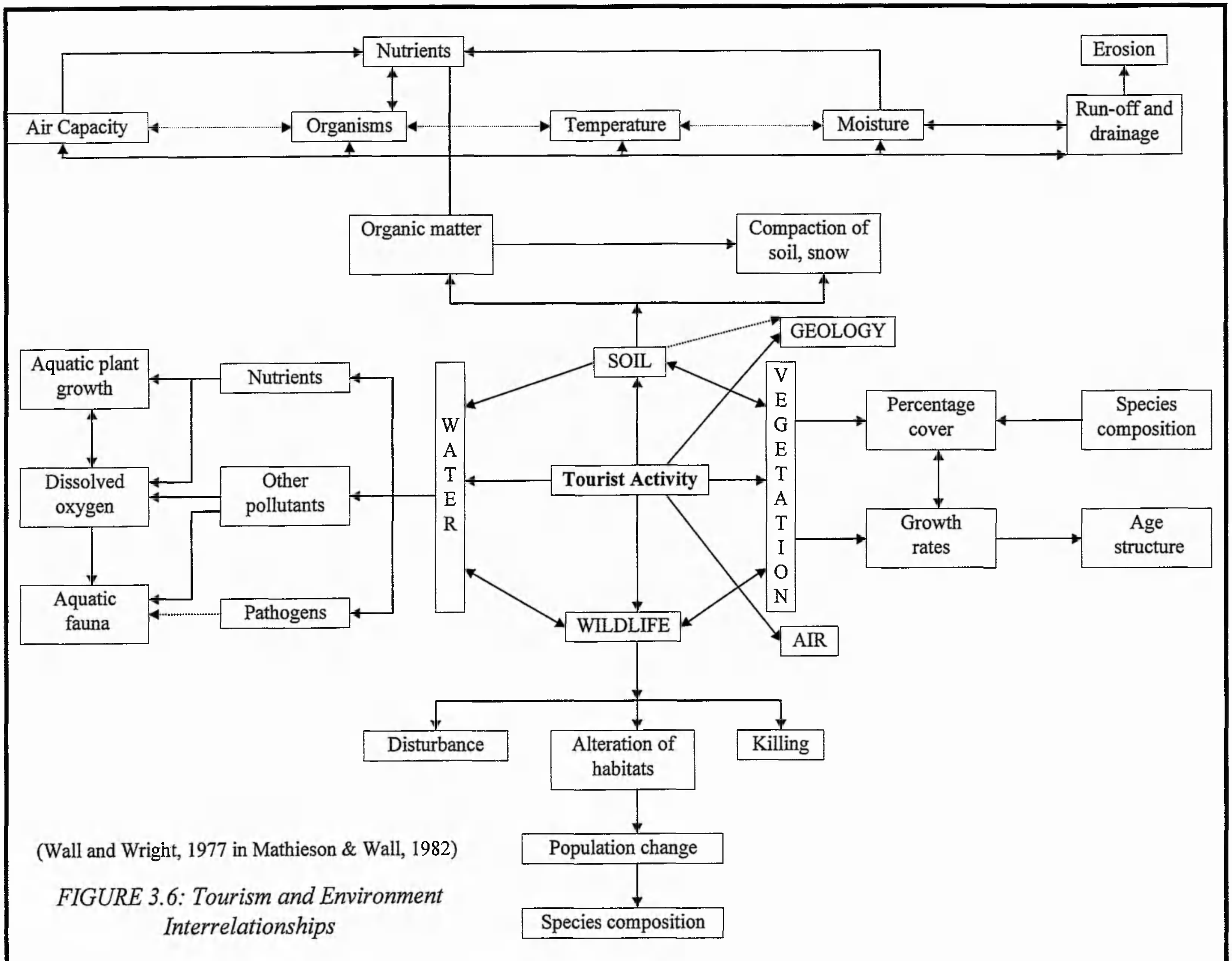
Many camps in the region have semi-permanent tracks to them, as they may be winter dwellings for local people. In this case, the changes to surrounding vegetation compromise the ability of local people to graze their animals in winter. Although single-use camps generally have little impacts upon the environment (Table 3.4), local authorities in Khövsgöl have concerns about the possibility of fires being started or left unattended and also the difficulty of control and monitoring of independent travellers.

Type of accommodation or shelter	Vegetation clearance or damage	Soil erosion and / or compaction	Wildlife disturbance or habitat destruction	Firewood collection and campfires	Solid wastes	Water pollution	Noise	Visual
Continuing development	Tracks etc.	Unsealed tracks etc.	Shyer species leave area	Collected elsewhere if used	Garbage treated sewage	Sullage increased nutrients	Machinery and motors	Conspicuous buildings and infrastructure large vehicles
Fixed tourist camps	Site clearance initially and continuing tracks etc.	If ungrassed and increasing with use	Habitat clearance shyer species leave area	Large area often denuded	Garbage litter toilets 🕮	Sullage increased nutrients bacterial	Generators car engines, chainsaws, radios, voices	Vehicles, caravans large tents, equipment, campfires
Seasonal tourist camps	Increasing with use	Increasing with use	Depends of frequency of use	Large campfires common	Litter, human wastes 🕮	Bacterial, soap 🕮	Car engines, chainsaws	Cars, large tents, campfires
Boat access shore sites	Increasing with use	Bank erosion	Minor, localised	Large area often affected regular large campfires	Litter, fish guts, human wastes 🕮	Petroleum residues	Outboard motors, voices	Boats, large tents, fires, clearance
Often used trail camps	Localised new tent sites	Localised depends on soil type	Minor, localised	Depends on vegetation type large area may be affected	Some paper, human wastes 🕮	Bacterial soap 🕮	Voices	Small tents, fires
Single-use camps & bivouacs	Minimal or none	Generally n one	Temporary or none	Minimal or none	Generally none	Generally none	Minimal or none	Minimal and temporary

🕮 May be alleviated by education

(Adapted from Buckley & Pannell, 1990)

TABLE 3.4: Environmental Impacts of Accommodation and Shelter



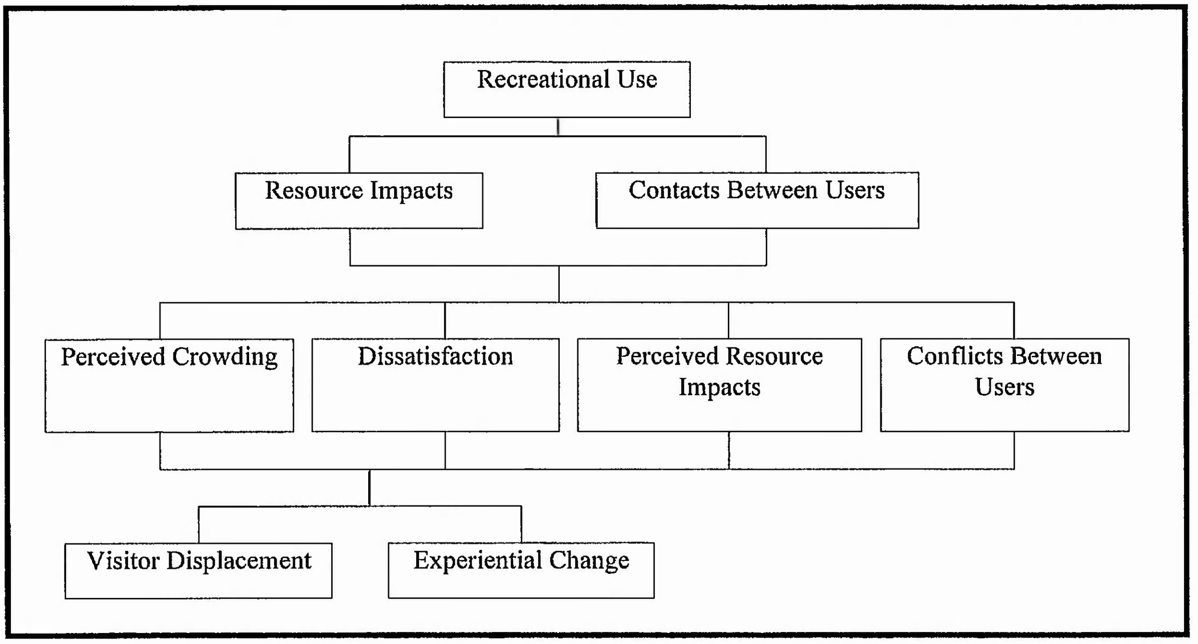
(Wall and Wright, 1977 in Mathieson & Wall, 1982)

FIGURE 3.6: Tourism and Environment Interrelationships

In conclusion, with increased activity in an area, the vegetation is subject to physical breakdown and wounding; the soil medium experiences changes in compaction, changes in moisture balance and nutrient availability. This, then, compromises the ability of livestock to graze effectively in certain areas, and changes the distribution patterns of other fauna. Of equal importance, but posing a more difficult concept to measure, are the socio-cultural changes that may occur as a result of tourism. These changes may affect local people, or in some instances, the tourists themselves. These changes are described by Figure 3.6, which shows how tourism can impact upon the different facets of the environment.

3.3: Socio-Cultural Impacts

From the discussion in Section 1.5 which outlined the socio-economic and cultural landscape of Khövsgöl, and the discussion in this chapter considering demand characteristics, socio-economic impacts can be broadly split into those which act upon the visitors themselves, and those which act upon the host communities. Figure 3.7 illustrates how visitor impacts can be divided into four aspects of increasing recreational use.



(Kuss, *et. al.*, 1990:190)

FIGURE 3.7: Social Impacts of Increasing Recreational Use

'Crowding' is the negative evaluation of a certain density of people, a value judgement signifying that there are too many people. 'Crowding' is subjective, rather than objective, and depends upon the expectations of the visitor, and to a lesser extent, the environmental morphology of the region[2]. A hilly region would support more people than a flat one, as the line of sight between people would be interrupted; giving the impression that the landscape is less populated than it is. A second factor affecting the perception of crowding is the observation of environmental impacts and their importance to the visitor's recreational experience. An example of this would be the erection of multi-lingual signposts in Hatgal, which might impact to a greater negative degree upon drifter types who seek very little familiarity and shun contact with tourists (Section 2.2.3), than explorer types. This also depends upon the recreational

[2] Taking this definition, visitors in Ulaanbaatar or Beijing who **valued** having many other people nearby would not perceive 'crowding' (in the manner implied).

experience desired. Visitors seeking wilderness (Singh & Kaur, 1986) will be more affected by the presence of horse trails than mountain bikers or hikers, who may acknowledge the impact, but not place a great negative value upon it (Shechter & Lucas, 1978). Stankey (1973) indicates that debris left by previous campers is the source of the most frequent complaints by visitors.

Sensitive	Tolerant
Paddling canoeists	Motorboaters
Hikers	Trailbikers
Skiers	Snowmobilers
Non/off-road vehicle users	Off-road vehicle users
Fishermen	Other water-related sports
Backpackers	Horsemen
Wilderness users	Developed recreation area users
Small groups	Larger groups
Frequent participants	Infrequent participants
Experienced visitors	Inexperienced visitors
Specialists	Generalists
High status	Low status
Wilderness purists	Urbanists
Nature/solitude seekers	Thrill seekers

(Kuss, *et. al.*, 1990:207)

TABLE 3.5: Synopsis of Sensitive Versus Tolerant User Groups

Additionally, some activity groups are more sensitive to sharing the environment than others (Table 3.5). In general it seems that those who are participating in an activity, where the activity itself is the prime motivation, are more tolerant of other groups. This may be because their participation in the activity is not affected. Those who are participating in an activity which relies upon interaction with the environment are therefore less tolerant of those whose activities alter that environment in some way. In some cases this may involve the mere presence of other people, in others it may be the evidence of previous participants.

Conflicts occur when visitors undertake activities which impinge on each other's experiences. Often these are generated between motorised and non-motorised users. It may also occur within the same activity, as groups with different expectations or standards interact, for example large and small groups of backpackers. Table 3.5 outlines common conflicts between different types of recreationists.

Conflicts between user groups are often one-way, for example, canoeists would dislike motorboaters but motorboaters would be unaffected by the presence of canoeists (Kuss, *et. al.,* 1990). In Khövsgöl, smaller groups of international tourists were found to be intolerant of larger groups. On a number of occasions, small groups of Discovery Expeditions participants expressed irritation at the presence of larger groups of tourists from Purvdorj's camp. They were especially intolerant when visiting local people along the western side of the lake, as large groups of tourists tended to drive along the area, taking photographs (Brown, 1996).

Kuss, *et. al.,* (1990:193) also suggest that visitors may alter their behaviour patterns to compensate for a change in experience through crowding or impact.

> "displaced recreationists may seek out a substitutable setting and be replaced with visitors more tolerant of rising use levels".

Nature or solitude seekers are generally less tolerant than adventure tourists, generally due to the emphasis placed upon the environment as the experience itself rather than a particular activity, where the environment is merely a backdrop, or an intermediate aspect of the experience (Stankey *et. al.*, 1985).

Secondly, cultural tourism focuses upon local peoples, their lifestyle and traditions. It has already been mentioned (Section 2.2.4) that ethnic tourism represents a particularly strong potential impact upon local people, due to its emphasis upon 'interaction'. Potential positive impacts would include the economic benefits of higher incomes, and increases in employment and the standard of living (although these may also be regarded as negative impacts upon the traditional culture). Cultural brokers and entrepreneurs are also likely to benefit, whether inside or outside the community.

There is potential for ethnic revitalisation, where traditional skills and traditions are revalued (leading to a renewed interest in tradition and a boost to the economy). However, this is subject to questions directed at the 'authenticity' of such customs, particularly whether they have remained traditional or whether they have they become a commodity. Enkhtuyaa (1995) relates that one of her relatives will be able to carry on his traditional skill of saddle-making, in order to supply visitors with local crafts. As none of the saddles are expected to go to local people for the purpose of riding, but are in effect souvenirs, how does this degrade their authenticity? Pearce (1988) describes four types of authenticity, describing whether a situation or custom is 'real' (Figure 3.8).

1. Authentic people in authentic environment, defined as backstage people in a backstage region
2. Authentic people in inauthentic environment, defined as backstage people in a frontstage region
3. Inauthentic people in inauthentic environment defined as frontstage people in a frontstage region
4. Inauthentic people in authentic environment defined as frontstage people in a backstage region.

(Pearce, 1988)

FIGURE 3.8: Authenticity

In Mongolia as a whole, tourist companies such as Juulchin are promoting staged festivals, such as the 'mini-naadam' (Authenticity stage two) that visitors may experience, even if they miss the real thing. Demonstrations of traditional music are common at Toilgot camp (Authenticity stage three).

Negative impacts include the commoditisation of culture and denigration of sacred sites (Johnston, 1990). Culture becomes a product that is demanded by tourists rather than recognised in context. Wight (1993a) suggest that this increases social tension, socio-cultural breakdown and loss of identity and place. Contact with foreign cultures also influences local people in terms of dress and presence of consumer goods. This may make them appear to be less 'authentic' (Figure 3.8).

Where different cultures meet, there is the possibility of discord, especially where visitors do not have the time or inclination to be sympathetic to a different perception of the world. Doxey (1975) suggests an index (Figure 3.9) to describe the stages of host attitude to visitors, from initial contact to hostility. However this scale does not take into account issues of culture that may affect attitudes, nor the underlying economic structure of the region, which may or may not encourage financial redress for local people.

Euphoria
- Enthusiasm for tourist development
- Mutual feeling of satisfaction
- Opportunities for local participation
- Flows of money and interesting contacts

Apathy
- Industry expands
- Tourists taken for granted
- More interest in profit making
- Personal contact becomes more formal

Irritation
- Industry nearing saturation point
- Expansion of facilities required
- Encroachment into local way of life

Antagonism
- Irritations become more overt
- The tourist is seen as the harbinger of all that is bad
- Mutual politeness gives way to antagonism

Final Level
- Environment has changed irreversibly
- The resource base has changed and the type of tourist has also changed
- If the destination is large enough to cope with mass tourism it will continue to thrive

TIME

(Doxey, 1975)

FIGURE 3.9: Doxey's Irridex

Although this is a rather simplistic interpretation of how communities might react, it does serve as a reminder to managers that 'the people factor' contributes to the overall visitor experience. Doxey's Irridex also indicates a linear route that ends with the 'final level'. This is not sustainable in terms of maintaining an acceptable visitor experience and landscape. In order to increase the amount of time that tourism can remain productive, the transition between each phase would have to occur over a long period, or be kept to the first two levels, thus increasing the amount of participation local people may experience in decision-making, and placing more value upon the quality of the environment. It has already been stated that 'ecotourism' (Section 2.2.5) is not automatically 'environmentally friendly' and it is necessary to redefine ecotourism to denote something more 'sustainable'. Thus, management focuses upon retaining the first two levels - prompting an 'awareness' - even if the Irridex itself is not academically rigorous.

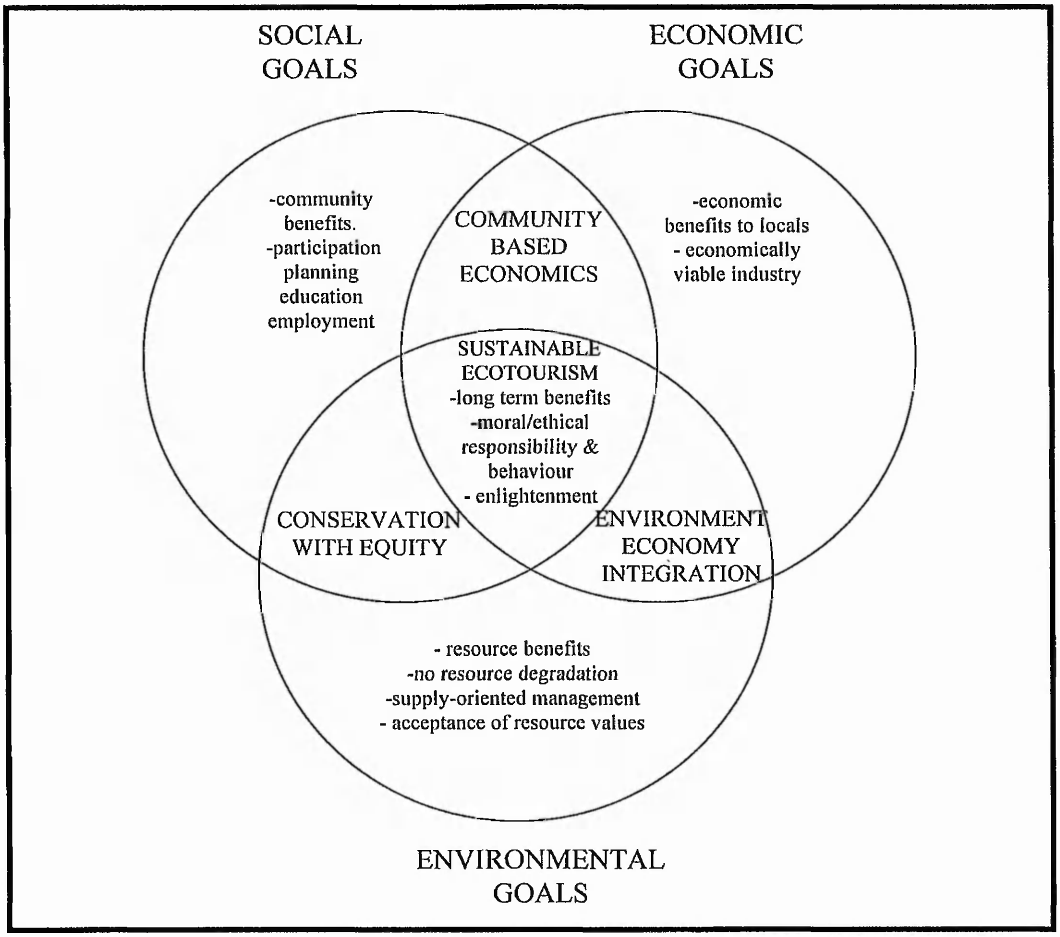
3.4: Concept of Sustainable Ecotourism

> "Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs"
>
> (WCED, 1987:22)

The problem arises however in determining the degree and direction (both geographically and conceptually) in which tourism should move in a region and allow adequate monitoring of the physical and social environment in order to target management philosophies effectively. It is difficult to accede to the degree to which acceptable degradation may occur, and compromising this with economic requirements, and also in measuring and monitoring degradation sufficiently precisely to allow tourist numbers and values to be linked with environmental and cultural changes. The sustainability of the host culture is much more difficult to guarantee than the environment as it is a valued state. Who is to say that one particular aspect of a culture is more important than another, and who can predict the changes in culture that would have occurred with only half the number of tourists, or with a different type of tourist and infrastructure?

This concept is termed "Carrying Capacity"[3] and is difficult if not impossible to define and attach values to. What normally occurs is a 'guestimate' based upon available evidence, and expert knowledge of the decision-maker. It must also be realised that carrying capacity is not a static figure, but varies with the environment, time of year and changing culture of local people. This is carrying capacity in terms of the environment, but it may also be described in terms of recreational use - some measure of visitor satisfaction. As already mentioned in Section 3.3, different activities may be more or less tolerant of other users. Hendee *et al.* (1978) describe carrying capacity as the ability of the physical-biological environment to withstand recreational use. It may also be used to express the amount of use that is consistent with some measure of quality in the recreation experience.

However, tolerances can vary dramatically, often within a very small spatial and temporal span. This must be taken in context when generalising about a region for the purposes of recreational assessment. Tourists visiting an area for its wilderness values would not appreciate encountering many other tourists (Section 3.3), and so the carrying capacity of the land for that activity would be low. A forested area would have a higher carrying capacity for the same spatial area, as the physical presence of trees would cut down the viewshed for each tourist group.



(Wight, 1993a)

FIGURE 3.10: Sustainable Ecotourism Values and Principles Model

Sustainability is a part of ecotourism that compromises impacts upon different aspects of the geoecology of a region in order to achieve social, economic and environmental goals (Figure 3.10). Sustainability must not be seen as the conservation of the environment at the expense of social and economic factors, but rather is some balance between them that does not irreparably damage the structure of any. In this manner it may be viewed as a 'buzzword', describing a concept rather than some achievable objective.

[3] Carrying capacity can be defined in terms of making a judgement as to what constitutes acceptable change. The LAC management system, described in Chapter 4 allows goals to be defined which

There is a continual struggle between each of these three aspects, and their individual importance will be decided by the legislative bodies involved in managing the region; in addition to the culture of the people and their attitudes to environmental issues and the need for economic growth. However:

> "Ecological determinism alone is no more defensible than economic determinism" (Pigram, 1990:6).

Sustainability involves a carefully considered management policy to maximise economic output over the greatest period of time within environmental constraints. Although sustainability may not generate the amount of revenue in the short term that other types of tourism might, by careful management, the attractions of the region, both environmental and cultural, are monitored to ensure that tourism does not degrade its own resource base and will therefore continue to support the economy into the long term.

3.5: Conclusion

It has been demonstrated that impacts are a function of destination characteristics, (supply), and tourist characteristics (demand) after management has been taken into account (Figure 3.1). The ecology of Khövsgöl, coupled with the land management practised by the local people in the form of nomadic pastoralism (Section 1.5.5) creates specific conflicts between visitors, the local community and the environment. Recreational activities in terms of type and usage need to be defined for the region, and areas sensitive to particular forms of stress or disturbance should be indicated. As

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management then achieves, rather than allowing perceived capacity to define goals.

discussed earlier, even small changes in location of roads and tracks can affect the surrounding ecology, due to the varied topography of mountain regions.

Changes in the host community and the ecology of the region may produce feedback effects, which in turn influence the demand for the destination, thus changing the tourist typologies. If uncontrolled, the recreation experience will become less attractive to current tourists, of drifter/explorer type (Section 2.2.3) and they will cease to arrive in the region. Instead, tourist typologies more suited to the changing nature of the visitor experience will be attracted, ultimately influencing feedback to the kind of development undertaken in the region. These tourists may be less sensitive to the environment, both in its effect upon them, and their impacts upon it. Thus, it is very important to monitor both the environment and also the types and motivations of tourists visiting the region. These issues are explored further in Chapter 6 where a questionnaire distributed to visitors to Khövsgöl in 1996 is described. Chapter 5 discusses how this sort of information could be integrated into a GIS.

The use of a GIS in Khövsgöl would enable managers to undertake complex analysis about the environmental, social and touristic components of the landscape. It is important to base these components in some form of framework. Chapter 4 will address the goals and planning strategies associated with the management of National Parks, critically examining traditional and more contemporary plans and suggest management solutions for controlling impacts through conflict resolution and effective regional monitoring.

Chapter Four

PROTECTED AREA MANAGEMENT

Chapter Four

PROTECTED AREA MANAGEMENT

4.1: Introduction

This chapter will consider some of the ways in which management of a Protected Area may be approached. It is necessary to examine the nature of Protected Areas in terms of the difference between designation by an International authority and that of a local governing body and the different classifications of Protected Areas and their associated goals and objectives. In this way an overview of management strategies for Khövsgöl National Park can be gained and these can be further analysed (Chapter 5) in terms of the contribution a GIS would make.

In terms of any Protected Area, some form of management structure is required in order to avoid, resolve or reduce conflicts between the environmental, social and tourism aspects of a region, and ameliorate the effects of negative impacts of these upon each other. To do this, some form of goal or goals must be established, and management structured in such a manner as to attempt to achieve these.

Hendee and von Koch (1990) state that without an orderly planning process, management may be no more than a series of uncoordinated reactions to immediate problems. The cumulative result of these decisions may be undesirable and hard to resolve, as the loss of direction may not be recognised for some time. Unplanned management may be recognised by a shifting of focus from problem to problem;

inconsistent, conflicting actions and a loss of overall direction towards conservation goals (Nelson *et al.*, 1978). This state is exhibited by the current management of the Khövsgöl National Park, whereby the management hierarchy (Figure 2.13) is pulled in several different directions by imbalances of power. This is caused by a lack of clear legislation determining the roles of the Ministry of Nature and Environment, and the Ministry of Trade and Industry where their interests in tourism overlap. This situation is explored later in the chapter.

Consequently, a need is established for some method of planning that will allow this legislation overlap to be seen in context, and help to identify and resolve some of the conflicts that are occurring between the tourism, social and environmental aspects of the landscape. Hendee and von Koch (1990) note that good plans have a stabilising influence on management, despite changes in personnel or the influence of multiple administrative units where different managers have different philosophies or perceptions or definitions. The potential for obtaining personnel and funding essential for management will be increased by plans that identify clear objectives and management actions necessary to achieve them.

Within planning and management is a structured terminology relating a number of products. The products at the top of the management hierarchy are goals. These are defined by Hendee & von Koch (1990:200) as:

> "general portraits of ideal ends or effects. They limit the range of potential objectives by providing direction and purpose"

In the case of Mongolia's Khövsgöl National Park, these goals are somewhat ill-defined, the area of the Park being under the jurisdiction of both the Ministry of

Nature and the Environment and the Ministry of Trade and Industry. Ultimately, local people also turn to the local administrative bodies of the *sum* they are in. Mongolia's trade laws (Oyuntsetseg, 1993) state that developments which encourage tourism or resource extraction are particularly encouraged, although any developments should protect the environment (Section 1.4.4). Thus, any conservation-oriented goals would be challenged by tourism or resource extraction developments; neither of which are given any importance over the others.

A fundamental assumption is made by the researcher that the overriding goal for the Khövsgöl National Park is that of conservation of the environmental and social landscape, and that tourism and resource extraction (although very important to the local and national economies) must be regarded as secondary to this aim, and pursued only where acceptable changes to the geoecology of the region would be expected to occur. This assumption has been made in lieu of any clearly defined goals from the MNE and is the underpinning of any management strategy. If resource extraction is felt to be an essential feature of Khövsgöl, then perhaps it should be termed a 'Multiple Use Zone' (Table 4.2) rather than a National Park. Determining whether particular changes are acceptable or not would depend upon the standards set by the National Park Administration (Table 4.1). Any proposed development should have an Environmental Impact Assessment statement produced, to ensure that potential impacts are considered. A Geographical Information System (GIS) would be useful for preliminary development planning in these instances, to model 'what if' scenarios and determine the basic suitability of any landuse planning. The use of a GIS to integrate monitoring data would then allow an up-to-date view to be taken of the ongoing impacts. Management actions can then be quickly targeted, should environmental standards not be met.

Once goals have been defined, objectives can be set and are similarly described as:

> "statements of specific conditions to be achieved - reference points, which, if attained, will assure progress in the direction of established goals." (Hendee & von Koch, 1990:15)

Hendee & von Koch make the distinction that objectives are sustainable in the short term, and are more specific than goals. Additionally, management direction is expressed by Table 4.1 where a plan is made up of these elements.

Policies	explicit expressions of intent describing what will be done in order to attain objectives. Sometimes describes what will not be done, or prescribes constraints.
Programmes	sets of related actions which are combined to help achieve particular objectives within a policy
Actions	specific practices applied to achieve objectives within the constraints of established policy and programmes
Standards	performance criteria, acceptable norms or specifications defining desired conditions of achievement.

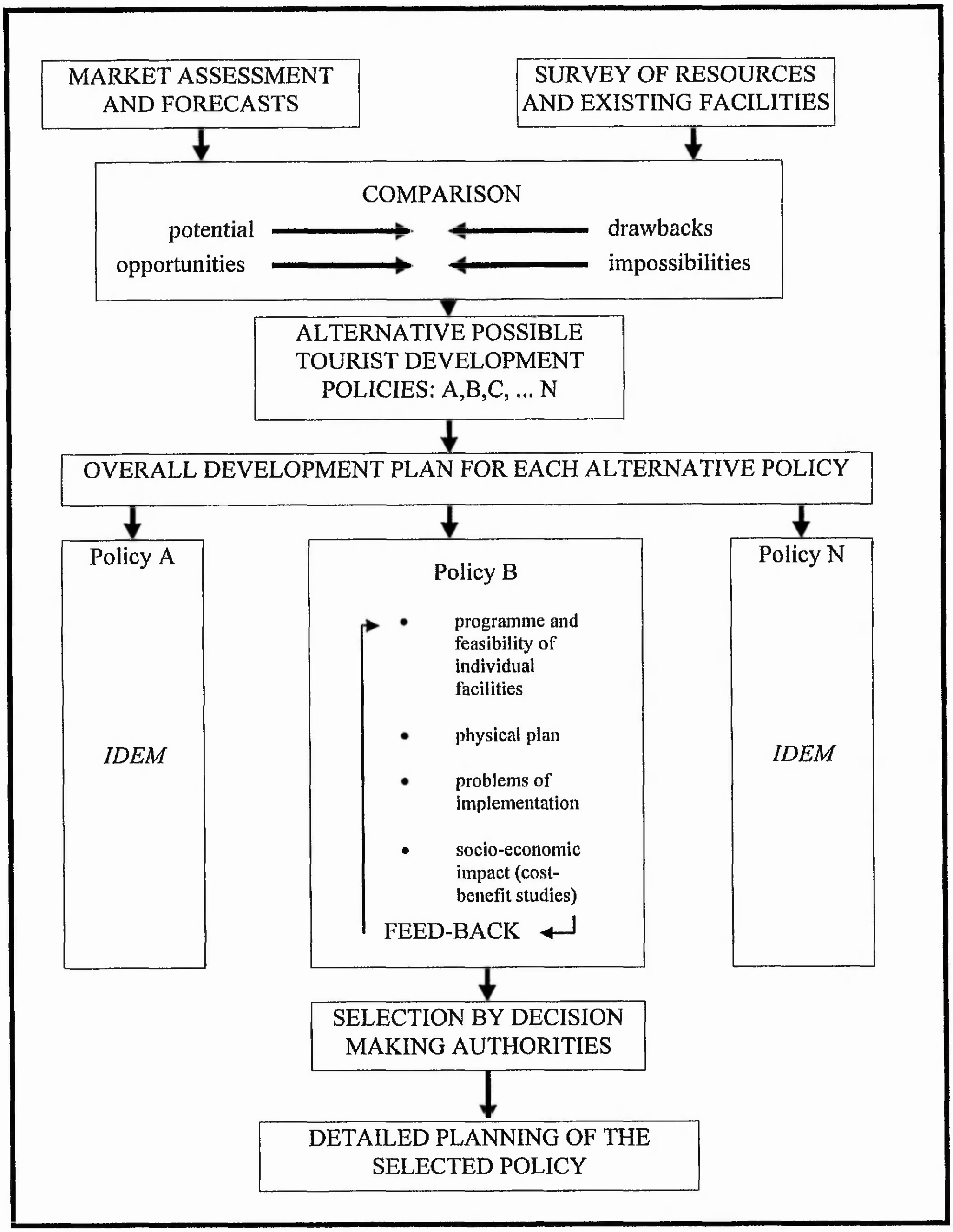
(Hendee & von Koch, 1990)

TABLE 4.1: Management Direction Terminology

Historically, tourism management has been approached by the inventory of existing resources and facilities and placing a value upon their potential for use. This standpoint has been limited, however, by the value judgements of the decision-makers and by their priorities. Figure 4.1 illustrates the traditional management plan, from the survey of existing facilities, through the production of alternative tourist development policies and associated management plans, to eventual selection and implementation. More recently, Hendee *et al.* (1986) and others have approached management from the perspective of maintaining an acceptable or target set of conditions, which may be environmental, cultural or economic.

It has become more acceptable to approach multidisciplinary problems from a variety of philosophical standpoints with regard to data collection and analysis. More recently, emphasis has been placed upon interdisciplinary work which approaches multi-faceted problems from a common philosophy shared by all team members. Management strategies and the changes in IT storage and analysis capacity (Maguire *et al.*, 1991) have allowed many aspects of a problem to be analysed simultaneously, thus making possible the reconciliation of many different datasets in order to consider more fully the geoecology of a region.

This chapter will consider what a Protected Area is and place Khövsgöl National Park in the context of global Protected Areas. Management strategies for Protected Areas will then be explored.



(Gunn, 1994)

FIGURE 4.1: Traditional Management Plan

4.2: Protected Areas

4.2.1: Function

It is fundamental for later discussion to understand why certain areas are classified as Protected Areas and what roles they fulfil in a local, regional, national and global context. Areas are protected for a number of reasons. Firstly, they may contain areas of rare ecology, for example, wetlands - which are important resources for a wide range of other organisms; or plants which exhibit unusual features found in very few other places. Secondly, they may be remnants of some 'historical' situation, which has so far survived to present day. This may be in contrast to other areas of the landscape which have been affected by man or livestock. Thirdly, they may be 'islands' of biodiversity - regions which support huge numbers of different species of organisms (IUCN, 1980, Donnelly 1987 and World Conservation Monitoring Centre, 1992). Finally, they may be home to people practising a traditional way of life, which would otherwise be disturbed if development were to take place (McNeely & Miller, 1992).

By protecting these areas, they remain as a resource for future generations to utilise - either culturally or environmentally. Areas which exhibit a high biodiversity have a large genetic pool. Some plants may have very useful genes which could have medical applications, give better yield to crops, or confer better protection against disease.

As well as different reasons for giving areas Protected Status, each area may have different goals - these include protection, conservation and preservation and how the area is to be maintained; for example, to return it to some historical setting, maintain it as it is seen today, or to manage it to some idealistic perspective (all of which have some 'unnatural' or man-influenced aspects to them).

4.2.2: Classification

Classification of Protected Areas depends upon the classification body, whether it be an international organisation such as the United Nations Economic and Social Organisation (UNESCO), or the International Union for the Conservation of Nature (IUCN), or a national body, such as a government (Thorsell, 1992). The classification is generally related to the goals of the managing body for the region, whether a preservation role, or some lesser degree of this role, and the importance of subsidiary activities such as tourism within the goal structure (Baker, 1984 and Beresford & Lucas, 1992).

Khövsgöl is termed a National Park by the Mongolian Ministry of Nature and Environment, but is not officially recognised by the IUCN. Thus, officially, Khövsgöl is not a National Park by international standards, but may be referred to as a 'Protected Area'. For the purposes of this research, Khövsgöl may be referred to as a Park, National Park or Protected Area but does not imply international recognition other than that conferred by its own government.

The IUCN National Park list (Figure 4.2) classifies Protected Areas upon the basis of size, management policy and usage, therefore reflecting the type of protection afforded.

1. Scientific Reserve / Strict Nature Reserve
2. National Park
3. Natural Monument / Natural Landmark
4. Nature Conservation Reserve / Managed Nature Reserve / Wildlife Sanctuary
5. Protected Landscape / Seascape
6. Resource Reserve
7. Natural Biotic Area / Anthropological Reserve
8. Multiple Use management Area / Managed Resource Area
9. Biosphere Reserve (Batisse, 1982)
10. World Heritage Site (Natural)

(IUCN, 1971, 1990 and 1996)

FIGURE 4.2: IUCN Classifications

Table 4.2 illustrates the objectives of designations one to eight. It may be noted that in the case of Mongolia, designations 2 and 8 may be most applicable, taking into account the integration of the human use of the landscape into management strategies. However, it should also be noted that Khövsgöl is in danger of wanting to be "all things to all people", maintaining ecological diversity, indigenous use, making provision for recreation and tourism and allowing economic activities such as resource extraction. It is clear that conflicts will exist between these four objectives (Bowonder, 1993) and although the IUCN has addressed these issues within its classification, it remains to be seen whether these issues can be resolved satisfactorily within the Khövsgöl Protected Area.

Conservation Objective	Scientific Reserve I	National Park II	Natural Monument III	Managed Nature Reserve IV	Protected Landscape V	Resource Reserve VI	Natural Biotic Reserve VII	Multiple Use Area VIII
Maintain sample ecosystem in natural state	●	●	●	●	O	O	●	-
Maintain ecological diversity and environmental regulation	O	●	●	O	O	O	●	O
Conserve genetic resources	●	●	●	●	O	O	●	O
Provide education, research and environmental monitoring	●	O	●	●	O	O	O	O
Conserve watershed, flood control	O	●	O	O	O	O	O	O
Control erosion and sedimentation	O	O	O	O	O	O	O	O
Maintain indigenous use or habitation	-	-	-	-	●	O	●	O
Produce protein from wildlife	-	-	-	O	O	O	O	●
Produce timber, forage or extractive commodities	-	-	-	-	O	O	O	●
Provide recreation and tourism service	-	●	●	O	●	-	O	●
Protect sites and objects of cultural, historical or archaeological heritage	-	O	O	O	●	O	●	O
Protect scenic beauty	O	●	O	O	●	-	-	O
Maintain open options, management flexibility, multiple-use	-	-	-	-	O	●	-	●
Contribute to rural development	O	●	O	O	●	O	O	●

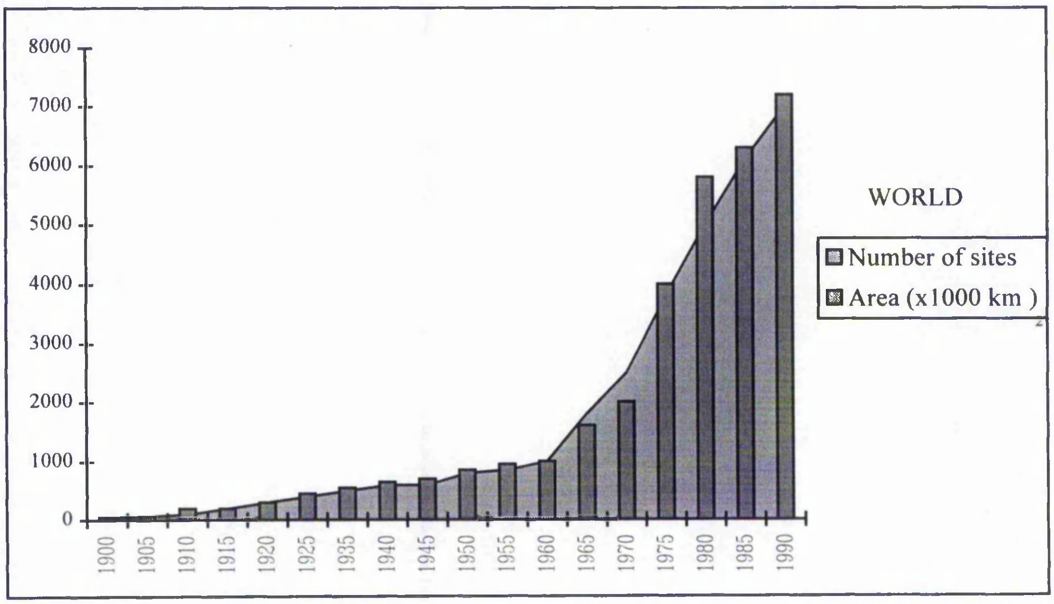
● = Primary Objectives
O = Compatible Objectives
(WCMC, 1992, 1996)

TABLE 4.2 :Protected Area Designation (IUCN Category Number)

The first modern Protected Areas were established towards the end of the nineteenth century. It was not until the 1940s that Protected Areas were beginning to be established in any significant number. In 1962, the first World Parks Congress was held in Seattle and, subsequently, establishment of Protected Areas increased dramatically (WCMC, 1992). Figure 4.3 illustrates the cumulative growth of designated Protected Areas, showing an exponential increase from the 1960's onwards.

National or governmental bodies may designate areas as part of an internally designed classification system for example Sites of Special Scientific Interest (SSSI) and Environmentally Sensitive Areas (ESA's) in the United Kingdom (Eagles, 1984). However, these may depend upon the compliance of landowners to enter into this form of agreement to restrict certain types of landuse (Batcher, 1987).

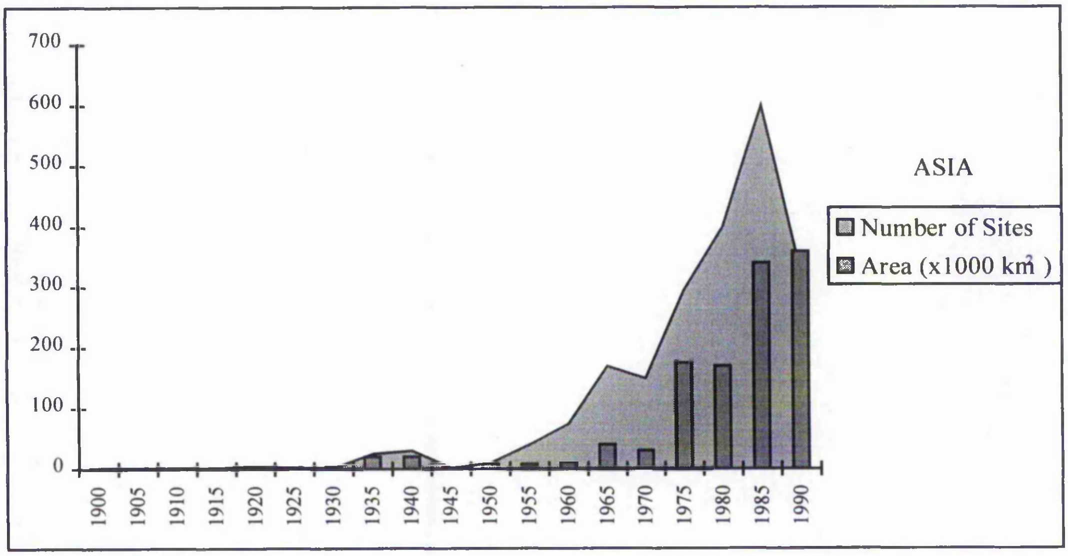
In this discussion, Mongolian National Parks are considered under the banner of Protected Areas and referred to as such. The object of the discussion is not to enter into arguments regarding the appropriateness of classification of Mongolian Protected Areas by international bodies, but more to look at them in the context of being defined as areas that are likely to be of interest to Ecotourists under the heading of alternative tourism and are therefore subject to a variety of conflicting interests. The Mongolian Protected Areas should be seen as part of a 'National Classification System'.



(WCMC, 1992)

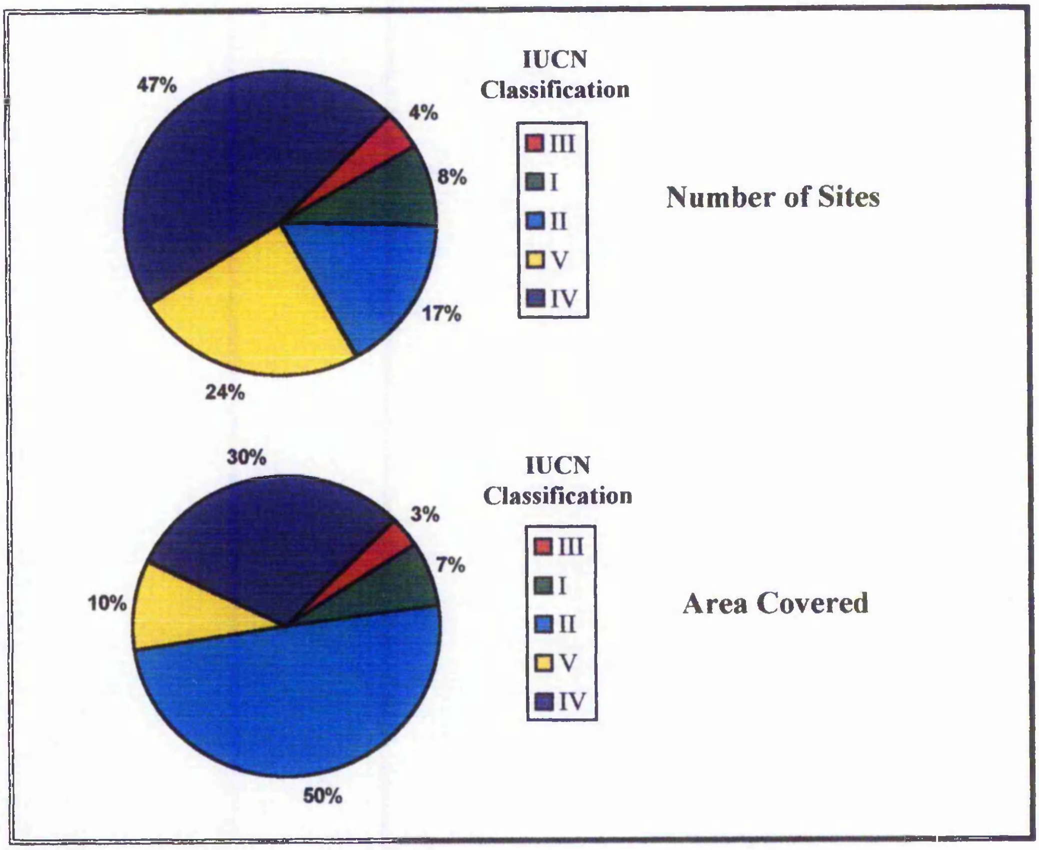
FIGURE 4.3 : Cumulative Growth in the Protected Areas Network

In a global context, the Protected Area network began to grow significantly during the 1960's (Figure 4.3). Within Asia itself, this period of rapid growth began a decade earlier, the growth of the network only slowing between 1985 and 1990 (Figure 4.4). Overall, the greatest number of Protected Areas are designated as Category IV (Managed Nature Reserves), whereas the greatest area is represented by Category II (National Parks) - although this is partially distorted by the addition of Greenland National Park and the Great Barrier Reef which represent a substantial area in themselves (Figure 4.5).



(WCMC, 1992)

FIGURE 4.4 : Regional Growth of the Protected Areas Network



(WCMC, 1992)

FIGURE 4.5: Protected Areas : By IUCN Category

Lower middle income countries such as Mongolia, rank second highest throughout the world in terms of total area dedicated to Protected Areas, with an of average 5.8 percent of their total land area given over to Protected Areas (Table 4.3). Lower middle income countries account for 12.4 percent of the world's Protected Areas, behind upper middle income countries and OECD high income countries. However, they account for 17.3 percent of the total area, second highest behind high income (OECD) countries of 34.6 percent.

Income Group and Subgroup	Number	% of Total No.	Area (km²)	% of Total Area	Average Size (km²)	Country Area (km²)	% of Country Area
Low Income (large)	758	8.9	421,300	5.5	556	12,764,000	3.3
Low Income (small)	734	8.6	1,067,300	13.8	1,454	24,636,000	4.3
Middle Income (lower)	1051	12.4	1,338,500	17.3	1,274	23,173,000	5.8
Middle Income (upper)	1126	13.3	1,200,400	15.5	1,066	41,404,000	2.9
High Income (OECD)	4713	55.5	2,677,100	34.6	568	31,079,000	8.6
High Income (Non-OECD)	62	0.7	990,600	12.8	15,977	2,381,000	41.6
Income not assigned	47	0.6	39,700	0.5	845	13,677,000	0.3
TOTAL	8491	100.0	7,734,900	100.0	911	149,114,000	100.0

(WCMC, 1992)

TABLE 4.3 : Distribution of Protected Areas by World Bank Income Groups

4.2.3 Legislation

Conservation action is typically carried out within legal systems established by National governments or, in some circumstances, regional or provincial governments. Mongolian conservation is co-ordinated by the Ministry of Nature and Environment (MNE) which has responsibility for the natural environment (Section 1.4.4). National legislation is often divided into flora, fauna and habitats (WCMC, 1992).

Four types of measures common to the protection of wild flora are restrictions upon collection, possession, trade and introduction. Exemptions on collection are usually granted for scientific purposes. Additionally, trade restrictions tend to reinforce collection bans by eliminating the economic incentives. The Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora agreement ensures endangered species do not cross international borders of those signed to the convention. Mongolia ratified this treaty in 1994.

More crucial to Khövsgöl may be the protection of its wild fauna. Protection of fauna may take the form of restrictions upon taking, possession and trade. Mongolia's hunting and fishing laws protect animals either partially or fully, depending upon the species and the time of year. In some instances, such as that of the Snow Leopard, a limited number of hunting permits may be issued by the ministry, for a fee, each year. Control also operates under CITES. Persons wishing to trade must apply to the government for a permit. However, Harper (1995) and Bennett (1995) describe the possibility of a black-market trade in animal products to tourists visiting Mongolia. Evidence of this is rife in the capital Ulaanbaatar, where the researcher was approached more than once near to tourist attractions and offered animal horns and skins, primarily from animals whose habitat range the Gobi.

The protection of natural habitats in Mongolia is undertaken by the Ministry for Nature and the Environment (MNE), although many are not officially designated by the IUCN. Khövsgöl does not receive international recognition at the time of writing, although it is suspected to fall into category II (National Parks), based upon the promotion of recreation and tourism in the region. However, goals for the Khövsgöl Protected Area remain unclear, thus making management goals difficult to define:

> "whereas the initial purpose of many such areas was to protect spectacular scenery and provide recreational facilities, in recent years the concept has evolved to encompass habitats of endangered species and ecosystems rich in biodiversity." (WCMC, 1992 : 445)

Problems of land ownership have been bypassed in Mongolia, as the political structure prior to 1991 ensured that land was owned by the state. Currently, local people living and working within the park boundaries sign a yearly "contract" which signifies their compliance with environmental legislation, including hunting and fishing laws.

This land ownership situation also negates the basis for incentives, which some countries use to persuade land owners to set aside particular land types, for example, wetlands. Protected Areas in Mongolia therefore have a centralised management structure, from the Ministry of Nature and Environment (MNE), to local level managers for each Protected Area (Figure 2.13).

4.3: Management Strategies.

In order to manage impacts (Chapter 3) within Protected Areas, a number of strategies can be employed. Table 4.4 separates these into direct and indirect strategies that may be used to achieve planning goals in terms of tourism or environmental status.

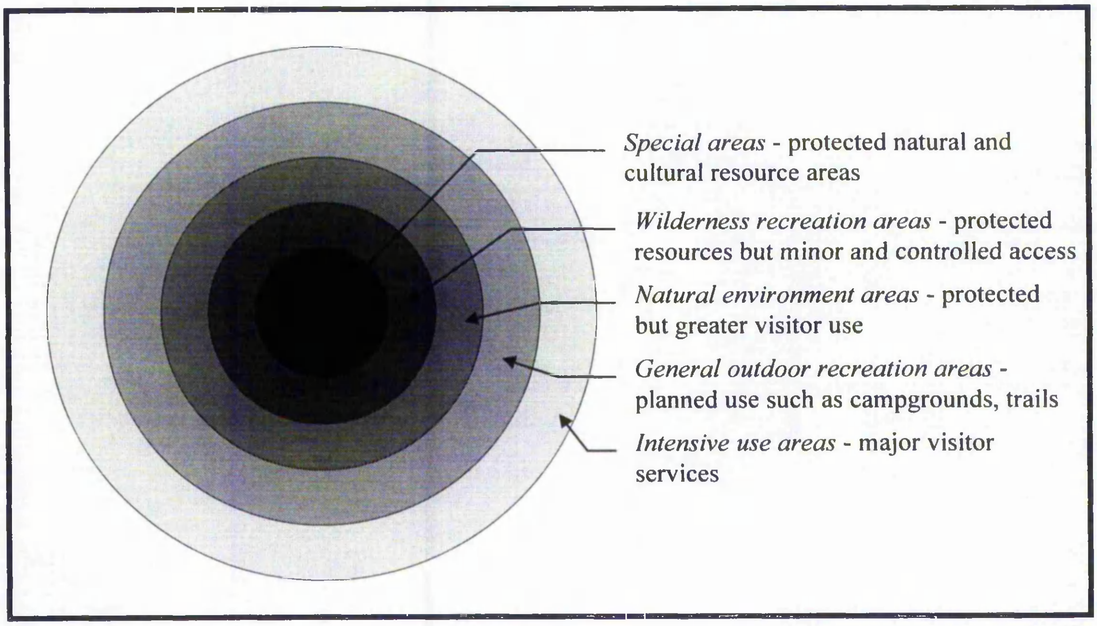
Direct strategies include enforcement, which encompasses increased surveillance and the imposition of fines. Mongolia has new laws imposing higher fines upon unlawful hunting (Wingard, 1995), but surveillance is difficult and the logistics of the park are such that it is difficult to patrol the whole area (Boldbaatar, 1995), as much of it is wilderness. There are also discrepancies regarding who would impose the fine, and what incentives there would be for local people to report others breaking the law to the authorities (Tömörsükh, 1995).

INDIRECT	DIRECT
Physical Alterations	**Enforcement**
Improve or neglect access	Increase surveillance
Improve or neglect campsites	Impose fines
Information Dispersal	**Zoning**
Advertise area attributes	Separate visitors by experience level
Identify surrounding opportunities	Separate incompatible uses
Provide minimal impact education	
	Rationing Use Intensity
Economic Constraints	Limit use via access point
Charge constant fees	Limit use via campsite
Charge differential fees	Rotate use
	Require reservations
	Restricting Activities
	Restrict type of use
	Limit size of group
	Limit length of stay
	Restrict camping practices
	Prohibit use at certain times

(Adapted from Hendee *et al.*, 1978)

TABLE 4.4: Classification of Visitor Management Strategies

Zonation is a method by which different types of visitors or uses are separated from each other by conceptual boundaries, sometimes represented physically within the landscape. Areas most requiring protection would be subject to particular restrictions on usage, and tourism infrastructure could be contained within particular zones where the landscape is suitable to carry the greater amounts of visitor traffic. Figure 4.6 illustrates a concentric zone model, where five areas have been designated, each with different objectives within a Protected Area. The central "special area" zone receives the most protection and is buffered to some degree by the surrounding zones.



(Gunn, 1994)

FIGURE 4.6 : Concentric Five Zone Model

It should be pointed out that Figure 4.6 is merely a conceptual representation of the zoning strategy. In reality, physical limitations and boundaries will distort the form of the zonation, altering the effectiveness of outer buffer zones.

Zonation can also help to define which activities may take place within regions of a National Park - with recreation being the basis by which zonation is defined, rather than a purely ecological standpoint. Schechter and Lucas (1978) and Clark & Stankey (1979b) lend this method the term 'Recreational Opportunity Spectrum' (ROS).

Murphy (1985) notes that there is a common danger that zoning will become the planning goal itself, rather than the planning tool to bring about that goal. This can lead to rigid classifications and simplistic methods of development control that fail to keep up with changing environmental conditions or changing visitor patterns. Hendee and von Koch (1990) make it clear that zoning approaches are only appropriate under three criteria: firstly, that they obey the cardinal rule "do only what is necessary"; secondly, that zoning should be clear to users of the Protected Area - for example - through a permit or map; and finally, that zoning should not be used to reclassify areas or create special classes within the Protected Area if they are particularly degraded. Efforts should be made to improve them to the standard classification.

Within this, restrictions upon the intensity of use of an area can also limit impacts upon local communities and the environment, through limiting access via an access point, limiting campsite use, and requiring reservations. Of these, the latter is already a requirement in Khövsgöl. Toilgot campsite (Section 1.5.4) takes only foreign visitors, and requires a reservation to be placed by the foreign tour operator (Purvdorj, 1995). Permits and park fees are already in operation via the main access road to Khövsgöl, to the south of Hatgal. However, there is a horseback route into the region via Renchinlumbe to the west, which independent travellers may take; restrictions on use may not take account of this type of visitor.

It has also been suggested (Matthews, 1995) that non-permanent campsites may be maintained and rotated every year so as to spread the environmental impact. It is unclear whether this would change vegetation composition of winter grazing stocks to a greater extent than a single "honey-pot" campsite would. From the impacts discussion (Section 3.2), a minimum amount of trampling may recover within 1-3 years, but it is likely that intensive use by groups over 10 staying longer than a week would lead to permanent changes to the site.

However, this strongly depends upon the sensitivity of the region to increased stress levels, as it is this which dictates whether a higher level of stress or disturbance is likely to increase or decrease the biodiversity of a site (Figure 3.3). If a decrease in biodiversity is likely to occur with an increase in stress or disturbance, then it would be better to restrict activity to particular sites (degrading only those areas), leaving the rest of the vegetation unaltered.

The final example of direct action, would be to restrict activities through the size of the group, length of stay or timing. This type of restriction could be linked to zonation, and would involve conflict resolution (Section 3.3) compromising different activities undertaken by mutually compatible visitor types.

Indirect courses of action may include physical alterations to amenities, in order to distract or attract visitors. Information dispersal could educate local people and visitors about their impacts upon the environment, including codes of conduct for both tourists and host communities (Mason, 1994). Codes of conduct are voluntary codes which are not enforced, nor are enforceable (UNEP, 1996b). There are different codes for tour operators and the tourists themselves.

- Predeparture programmes which include visitor information and education.
- Guiding programmes which include general principles of guiding tours, prevention of environmental impacts. Prevention of cultural impacts.
- Monitoring programmes, including prevention of accumulated impacts of tourism.
- Management programmes, including prevention of nature tour company impacts, training and conservation contribution programmes.
- Local accommodation checklist.

(Lindberg & Hawkins, 1993)

FIGURE 4.7: Programme for Tour Operators

(Lindberg & Hawkins, 1993) suggest a programme for tour operators (Figure 4.7). Codes of conduct would also be useful for planners, tourists themselves, and local people. Educational material is not currently produced by the National Park administration in Mongolia, and this makes it difficult for the visitor to identify with the aims of the park (Section 1.5.4).

It is important to encourage local people to play an active role in the management of the Park (Cooper, 1987 and Haywood, 1988). In this way, some of the problems illustrated by Doxey's Irridex (Figure 3.8) may be avoided. Arenstein (1969) suggests a staged model whereby participation increases (Figure 4.8). Due to the administrative structure of the MNE and its independence from local authority control, there has been little co-operation between the National Park authorities and local people to date (Togtokhnyam, 1995). Although a discussion group does exist, the recent political regime of Mongolia has led to a situation whereby people find it very difficult to take a public role. Also, although both males and females are equally represented on the committee, the men usually take a leading role and express their views more strongly (Wingard, 1995). This is no criticism of Mongolian culture, just a statement of how Wingard finds differences between his expectations (based upon American culture) and Mongolian culture. After one household on the eastern side of Khövsgöl Lake in 1996 was surveyed, a man rode for two days to catch up with the researcher to add his own responses to questions, since he was absent at the time of the interview and his wife had answered for the household. The total ratio of males:females surveyed overall was almost equal.

1. INFORMATION introduction of existing tourism policy to citizens by the authority
2. ANIMATION stimulation of perception among citizens
3. PARTICIPATION (stage 1) Opening of dialogue between citizens and authority
4. PARTICIPATION (stage 2) Initiation of tourism planning on a basis of partnership
5. PARTICIPATION (stage 3) Joint research - identification of strengths and weaknesses, opportunities and threats etc.
6. PARTICIPATION (stage 4) Determination of tourism objectives and strategies
7. PARTICIPATION (stage 5) Joint decision making regarding resource allocation, development and management
8. OPERATIONALISATION Implementation of tourism strategy by administrators
9. PARTICIPATION (stages 6 and 1) Review of tourism policy and achievements

(Arenstein, 1969)

FIGURE 4.8 : Arenstein's Participation Ladder

Present participation currently falls between steps two and three on the ladder. With the opening of dialogue between the MNE and local authorities it is hoped that there will be greater local input in the management of Khövsgöl. An example of stage 2 participation was the development of a bakery in 1995 by the UNDP under a small business loan. This was run solely by local people in Hatgal and was able to provide a variety of baked products both for local residents and tourists. By 1996, an entirely new venture formed by local people in a different area of the town had emerged, and the first bakery closed down. This is an example of local people taking back ownership of enterprises for themselves.

Management strategies can be segregated into activity management and resource management, depending upon whether the emphasis is upon the visitor or the habitat of the Protected Area. As previously discussed (Section 4.2.2), the classification of a Protected Area, using the IUCN designation, segregates regions by their objectives. Therefore, some measures or indicators must be recognised that will show when goals have been reached, or highlight potential areas of resource conflicts. Table 4.5 suggests some indicators for measuring touristic condition in terms of environmental, political and economic factors.

Indicator Types	*Measures*	*Possible Indicators*
Physical	Infrastructure Superstructure Land/Space Transportation	Crowding Danger Supply
Economic	Capital Operation costs Opportunity costs Labour Inflation Market	Funding Labour shortages Tourism competition Other sector competition Rampant inflation
Ecological	Process changes Fire risk Pollution levels Erosion levels Wildlife viability Vegetation viability	Disaster expectation Irrevocable change Threatened uniqueness
Perceptual	Visual amenity User preference/motivations Activity satisfaction Resident satisfaction	Dissatisfaction Loss of visitors Landscape quality change
Socio/Cultural	Population stability Standard of living Services/amenities Community viability Social problems Traditions/language	Lost traditions Inequitable benefits distribution Crime/disruption Tourist resentment Visitor/resident mix
Political/Administrative	Policy/programme priorities Receptiveness to change Assistance levels	Inability to achieve objectives Failure to cope with pressures

(Gunn, 1994)

TABLE 4.5 : Indicators of Tourism Condition

Protected Area planning in Mongolia is directed not from local, regional and national scales, but from a central governmental body (MNE) which administers to each of the Protected Areas, forming a management network, whereby local park managers work independently of local governmental bodies (Section 1.4.4).

This 'basket of tools' has been shown to have direct, or indirect effects upon impacts. These tools may then be compiled into a regional management plan along with indicator conditions, which allow administrators to monitor how effective a plan is at achieving its goals.

4.4: Planning Strategies

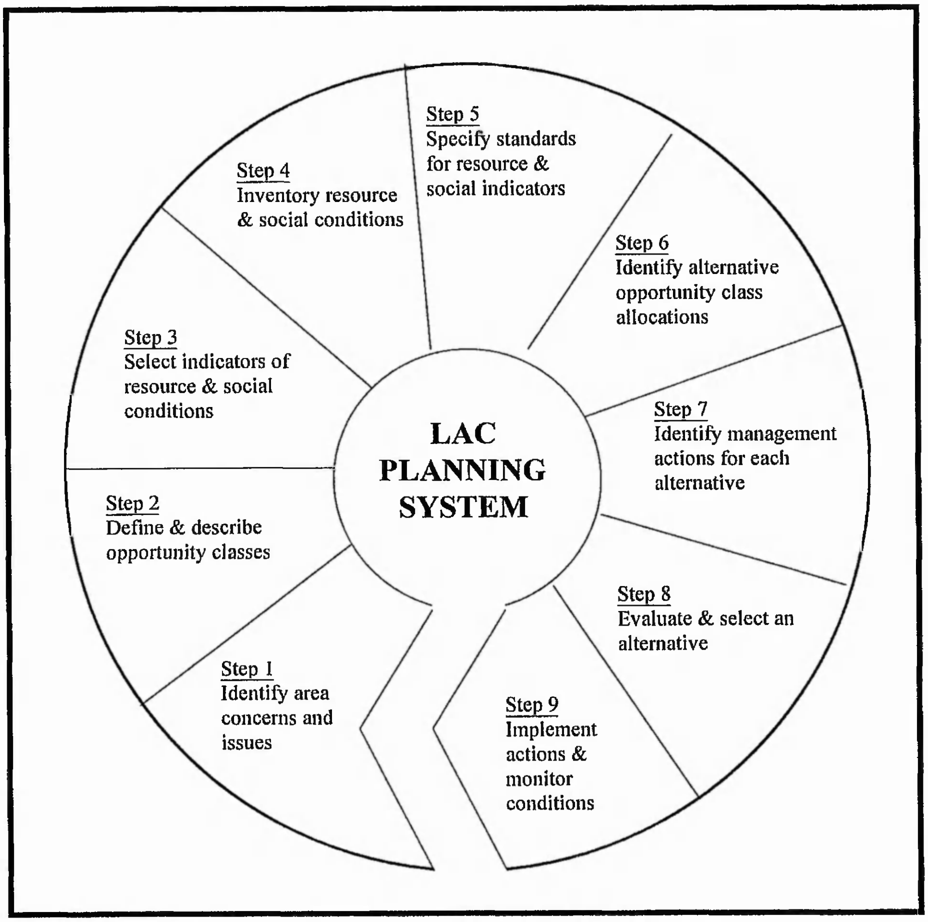
Planning is the method by which specific management tools are combined in a manner best suited to attaining the overall goals for the Protected Area. Traditionally, plans have been approached by an inventory of all resources, then modelling potential developments and presenting these to the decision-making authorities who would select one for a detailed plan (Figure 4.1).

The greatest disadvantage of this system is its rigid outline that does not allow for changes to the inventory, alternative developments or modelling, after the initial surveys have been completed. This occurs since a survey of resources is extremely time and cost intensive. The outcome of this type of planning methodology is likely to be dated by the time it has been drawn up, and takes no account of changes in the landscape which might cause the plan to lose sight of its intended goal.

To bypass these disadvantages, alternative management strategies took a different approach and were constructed around the attribution of a value to the concept of **carrying capacity** (Section 3.4) of a region, whether it be environmental, cultural or economic capacity. When monitoring indicated that this arbitrary value had been surpassed, measures were undertaken to curb impacts and bring them in-line.

More recently, the approach has been to decide upon an "ideal" set of conditions (rather than a carrying capacity), which management is continually attempting to achieve. Hendee & von Koch (1990) term this the 'Goal-achievement plan' and its methodology is centred on 'management-by-objectives'. Using current legislation as a base, objectives are specified which relate to aspects of the desired goal. After assessing the current management situation and making assumptions about future conditions, actions are defined which can be used to work towards these objectives. These actions may be altered as the landscape changes, or different impacts come to bear upon the geoecology of the region. Although this plan is more flexible than the traditional management plan, it may be criticised in that it takes no account of how, or by whom, the goals are set, and whether these goals are clear and reflect the intentions of those who designated the region a Protected Area. Additionally, the goal achievement plan makes no specifications for a monitoring system, and although this may be assumed, it is an unwritten assumption.

A closely related development of this model is the 'Limits of Acceptable Change' (LAC) plan (Hendee & von Koch, 1990). Managers (in addition to input from the public) identify issues and concerns to be resolved. Recreational opportunity classes (Shechter & Lucas, 1978), are a form of zoning (Figure 4.6) allowing particular activities to take place in certain areas. Indicators of resource and social conditions are selected, and the area inventoried to determine the current status of indicators (giving baseline data). At this point, specific standards for the indicators are defined - for example, the amount of bare soil allowable at a campsite, or the reduction in numbers of a particular indicator species in a meadow grazed by tourist's horses. Finally, monitoring indicators are included to confirm whether the objectives are being achieved.



(Hendee *et al.* 1986)

FIGURE 4.9: Limits of Acceptable Change (LAC) Plan.

The Limits of Acceptable Change strategy (Hendee *et al.*, 1986) concentrates on defining explicitly and quantitatively the amount of social and resource conditions that may be changed to a certain degree (Figure 4.9). The use of GIS (Chapter 5) in conjunction with the LAC plan would allow mapped data to be used at a number of levels. Section 8.2.6 discusses the use of a GIS tool within several of the LAC planning stages. The LAC plan produces a strategy whereby the landscape is classified in terms of particular recreational activities, based upon knowledge of the environment and social features in that area of the landscape. As a paper strategy, its logic is undermined by the ability of managers to accurately describe the information required for each step and then adequately analyse the data in terms of the spatial landscape. A GIS would represent information quickly, allowing managers to manipulate many different datasets. Thus, in defining opportunity classes across the landscape or monitoring conditions, many proposals can be modelled in a short period of time. It is primarily a tool for planning recreational activities and uses the Recreational Opportunity Spectrum (ROS) (Shechter & Lucas, 1978) as a basis for classifying facets of the social and environmental landscape.

These methods are similar to the 'drawing up lists of norms' approach which was taken by the Soviet system (Sneath, 1998) and with which, Mongolians are familiar. However, one of the main differences between them is the amount of public participation encouraged. Both the Goal-Achievement plan, and the LAC plan include public involvement, and are able to be flexible, allowing revision if monitoring indicates problems. The LAC plan also takes into account tourism, to some extent, in the form of the Recreational Opportunity Spectrum. Thus, conflicts between different activities and the environment may be partially avoided, or resolved.

Bastedo *et. al.* (1984) and Dowling (1993) concentrate upon a more ecological approach for environmental management. The ABC resource approach (Bastedo *et. al.*, 1984) judges the features of the Abiotic, Biotic and Cultural environments with regard to sustaining essential ecological processes and cultural heritage. This takes an almost opposing view to LAC, which is based upon managing for recreational opportunities. The ABC method divides the landscape into functional role (contribution to ecological or cultural processes) and structural role (the form this contribution is in). ABC relies heavily upon the use of maps for comparative analysis, a method that could be enhanced by the use of GIS technology (Chapter 5). However, Bastedo *et. al.* (1984) only consider the cultural environment in terms of physical (measurable) heritage such as the location of historical monuments, communications facilities and settlements. It is important in the case of Khövsgöl to also consider less tangible cultural components, such as the attitudes of local people towards tourism development. This is very important in the context of planning, increasing local participation in the decision-making process.

Hendee *et al.* (1990) defines a number of principles of wilderness management that can equally be applied to Protected Area management in general. These are general overviews of how management should work within an environment, and how management tools should be utilised within a planning strategy.

1. *Manage wilderness as a composite resource, not as separate parts*

There are complex relationships between each ecosystem part; vegetation, water, forage, wildlife and geology. Thus, one plan must deal simultaneously with the relationships between these and other components, rather than separate plans managing vegetation, recreation and wildlife. In Khövsgöl, legislation allows tourism to be governed independently of the conservation goals of the National Park (Section 1.4.4). This is leading to a breakdown in the management of both aspects. A Geographical Information System (Chapter 5) would assist in the construction of a plan to simultaneously manage all components, as it is able to integrate all data and function as a decision support system for managers.

2. *Manage wilderness and sites within, under a non-degradation concept*

Areas of the Park vary in the degree to which their naturalness has remained unspoiled. This concept calls for the maintenance of a particular standard of environmental conditions, to which areas that fall below this standard are restored. Thus the majority of areas are prevented from deteriorating to the minimum standard present.

3. *Manage wilderness to produce human values and benefits*

Wilderness is classified to protect fauna and flora, but exists also as a direct source of enjoyment, education, therapy or spiritual renewal. Additionally, some indirect benefits might include benefit from viewing wilderness on television, reading about it, or the increased scientific knowledge from research undertaken in wilderness. These types of benefits are very difficult to measure and are not necessarily optimally or exclusively produced in wilderness.

4. Guide management with written plans that state objectives for specific areas

This indicates some form of zonation (Figure 4.6) with clear and specific goals and objectives for each region.

5. Set carrying capacities as necessary to prevent unnatural change

Although carrying capacity (Section 3.4) is a somewhat dated 'measure' it may be used to convey a concept or a range. It is a relative term, rather than an absolute number to be calculated and its range depends upon the objectives established for a particular area. Managerial judgements must be used to identify when it is being approached, or has been exceeded. Although in some cases this may take the form of a numerical limit, it is not the same as placing an arbitrary limit on the numbers of various things, such as trucks or visitors, since this does not necessarily have any methodological approach. A limit on visitors could be placed within a region with no regard to the fact that the capacity of the region is far greater. Carrying capacity describes some form of 'optimal level' and is indicative of continuous monitoring to ensure that this optimum is still appropriate over time. Beyond this optimum, unacceptable degradation occurs.

6. Focus management on threatened sites and damaging activities

Site-specific management should be practised - rather than an 'across-the-board' approach, which would impose restrictions where they were unnecessary. Restrictions should be clear about whom should be restricted, under what conditions and criteria, and how these restrictions should be implemented.

> "Thus, to minimise excessive environmental and social-psychological impacts, restrictions should be selective - to times, places, and users having the greatest potential for damage." (Hendee, 1990 : 188)

7. *Apply only the minimal regulations or tools necessary to achieve wilderness area objectives*

The challenge for management is in the development, implementation and testing of **indirect** tools (Table 4.4), as opposed to the imposition of **direct** tools.

> "The guiding principle is that only the minimum regimentation necessary to achieve established wilderness management objectives is justified." (Hendee, 1990 : 188)

8. *Involve the public as a key to the acceptance and success of wilderness management*

This may be through a number of means, including volunteerism (Discovery Expeditions takes paying volunteers to help with scientific projects in the region), identifying conflicts and concerns (Hough, 1988) and helping with the management proposals (Figure 4.8).

9. *Monitor wilderness conditions and experience opportunities as a key to long-term wilderness management*

A good plan describes the conditions and standards expected to be achieved. Only by monitoring can it be determined whether conditions have changed and the standards achieved. Indicators should be used which reflect important attributes of certain groups of vegetation, animals, the physical environment, and social conditions.

10. Manage wilderness in co-ordination with management of adjacent lands

Impacts do not stop at human imposed boundaries, and can move from one area to another. Adjacent lands may be under the jurisdiction of the Park administration, and classified as 'buffer zones' - regions that act as a buffer between areas of markedly different landuse either side. Alternatively, it may be assumed that the Park designates part of its own area as a buffer zone. This may impinge upon the amount of area available for recreation, or leave certain sensitive areas vulnerable to impacts.

4.5: Conclusion

It is evident that planning methodology draws from the background and expertise of the manager and accounts for economic, ecological or social influences that may dominate a management plan. This has been the overriding shortcoming of many plans, in that they fail to take into account one area or other of the tourism situation. For example a plan focused upon environmental issues may fail to give proper consideration to social or cultural aspects of the landscape and hence is not sustainable.

Recommendations for the Khövsgöl National Park, from first phase research, identified several management issues to be addressed, including social problems (Togtokhnyam, 1995) linked to a lack of policy regarding the use of local labour and products by tourist camps, and the lack of participation between local people and the Park administration. There is a general lack of environmental and tourism information upon which to base decisions. Camp administrations have a tendency to bypass the Park administration, and take queries directly to Ulaanbaatar. This increases the feelings of marginality experienced by National Park staff (Section 7.2.4).

Hendee & von Koch (1990 : 211) suggest ten criteria by which to measure wilderness management plans that could equally be applied to any Protected Area management plan.

1. Does plan display management goals by summarising key legislation that guides management of the area?

It is important to determine the basis by which decisions about goals are made. Without this, goals could conceivably be set which do not reflect the intentions of those who sought to classify the area as Protected. Additionally, by placing the basis of the plan upon legislation already present, it can be ensured that development proposals cannot later be instigated without proper authorisation.

Management plans produced for the Khövsgöl National Park thus have a fundamental flaw, whereby legislation does not discriminate between the interests of tourism, and resource extraction. Although environmental legislation requires that any developments must complete environmental impact assessments and make provision for the protection of the natural landscape, trade and industry legislation is so strongly in favour of tourism and resource extraction, that there is the potential for this to be waylaid in the face of income generation. The potential for this to occur is further exacerbated by the economic needs of people 'on the ground'. Unfortunately, it is unlikely that local people in the region would receive a proportionate share of any income generation. Currently, resource extraction and tourism are controlled by companies which import their own labour and do not necessarily have much investment with the local people in a region. Ultimately, with the primary function of Khövsgöl as a National Park, any management proposals run the risk of being undermined by legal imprecision, allowing industry to exploit the very region they are bound to protect.

2. Are local conditions relevant to management of the [Protected Area] described concisely and explained?

There has been a tendency to place particular emphasis upon the natural ecology of the region, rather than encompassing the human influence. The importance of local people in Khövsgöl is directly related to the conservation goals of the National Park. The region is strongly moulded by the actions of local people and their livestock. Should these be changed, then the ecology of the area would change and thus, the character of the Park would be altered.

3. Is the general management strategy concisely explained (e.g. different methods of administration, managers and responsibilities, user requirements, use of zoning etc.)?

If managers and responsibilities are not precise, then information fails to be passed between groups, and each section tends to work independently of the other. This is a common situation in Mongolia generally. Communications technology is sometimes very unreliable and inter-departmental communications are generally discouraged in favour of messages that are passed up and down the internal hierarchies (Figure 8.11).

In Khövsgöl, user requirements are not planned in advance, but rather, tend to evolve as a case of market supply and demand for tourism. A case in point would be the hiring of horses to tourists. During 1995, all tourists conformed to the activities prescribed by tourist camps, mainly involving static 'appreciation' of the region from the camps themselves. By 1996, local people were in a position to rent horses and act as 'guides' for tourists wishing to see more of the region, independent of the tourist camps.

Zoning of the Park is seen as important. There are several 'Special Protected Areas' which local people and tourists are not permitted to enter. However, these are unmarked, and their boundaries exist only on a map in the Khövsgöl Park headquarters in Hatgal. Tourists are unaware of the existence of any boundaries, as there are no warning signs. In this way, current zonation seems to have no base within legislation or particular features of the region, and is completely ineffectual, as people are unaware of any restrictions.

4. Is plan logical, link objectives to prescribed management direction, e.g. policies and actions?

The draft plan by McCusker & Tömörsükh (1996) attempts to describe the main objectives, and potential actions that could be considered to achieve these. Each objective has a set timescale in order to force managers to rethink strategies after this time has elapsed.

5. How well does the plan consider alternative actions for meeting management objectives?

Alternative actions are discussed, but they are difficult to model. What is required is a computerised modelling system, whereby alternative scenarios can be played out in order to give some indication of future trends.

6. Does the plan address need for co-ordination of its resource management activities and non-conforming uses (e.g. other departments, conflict resolution)?

Managers are aware of the resource management conflicts posed by the possible introduction of phosphate extraction within the National Park, the tourists, local people and the environment; however, there is insufficient precision in current legislation to be able to give the Park the protection it deserves. Although the Park is managed by the Ministry of Nature and Environment, any goals they have may be disrupted by the Ministry for Trade and Industry, who are partially responsible for tourism legislation, and place a high priority on foreign investment in tourism and resource extraction. The proviso that any developments must conform to environmental regulations is not strong enough to prevent a development that could bring in substantial foreign currency.

7. Does the plan specify when and by whom the plan will be revised and updated. Does it identify what conditions/situations might prompt an earlier review?

Many of the problems of managing Khövsgöl arise from ill-defined roles. Byambatsukh (1995) was unable to describe what his job entailed (his title is 'Manager of Ecotourism') and worked mainly with the other rangers as part of a team erecting *gers* and visiting tourism camps. From this has evolved a type of 'management-by-objective' approach (Section 4.4). Unfortunately, the goals are vague and therefore it is unclear whether the actions being undertaken are achieving their objectives and, therefore, moving towards the goals.

8. Were the managers who administered the area, directly involved in the preparation of the plan?

The current plan for Khövsgöl was produced jointly by Tömörsükh - the wildlife biologist of the National Park, who both works and lives locally, and also by Jeff McCusker - a UN Biodiversity Project worker who has visited the region on a number of occasions. Previous management was dictated from Ulaanbaatar at the MNE headquarters, to the head of Khövsgöl National Park, in Hatgal. These managers were often residents of other regions of Mongolia and were often separated from their families. Additionally, many were scientists who did not possess the management skills required to bring in people from very different backgrounds and produce a comprehensive plan for the Park (Section 1.1).

9. Is guidance in the plan designed to resolve the issues and management concerns facing field managers? Does the plan respond to important issues/concerns raised by the public?

Currently, the National Park administration does not have a communications protocol with the regional administration (e.g. the Governor of Hatgal). Consequently, local people feel that the National Park administration is able to prescribe one set of rules, while the regional administration can prescribe another (conflicting) set.

Although McCusker & Tömörsükh (1996) reflect some concerns in their draft plan, those concerns raised by local people include hunting (of animals for food, and wolves), potential pollution by tourists and industry, changes and infringements of their traditional grazing lands by new tourism camps or tourists with large groups of horses. Perhaps the most highly visible issue with which local people are concerned, is the capping of tourism income leakage out of the region. Income from tourism currently bypasses most local people in favour of the tourism companies and their employees (mostly employed from other regions). The draft management plan fails to address the majority of these concerns, although they do consider that a better educational policy might help to inform more people about the aims and the intentions of the National Park.

10. Does the plan provide for a monitoring system, using field measures of indicators, biological, physical and human use to determine if standards are being met?

The draft plan (McCusker & Tömörsükh, 1996) acknowledges that monitoring is required, but does not propose specific indicators to measure this. This study will help to define some of the human 'indicators' that could be used, and can thus be combined with faunal (Harper, 1995 and 1996 and Bennett, 1995), and floral (Caddick, 1996) indicators, compiled by Discovery Expeditions and others.

In conclusion, the current management of the Park is restricted by legacy (i.e. older) management practices from the Soviet era. It is difficult to make fast and effective communications between different governing bodies as traditionally, communications were hierarchical. An individual wishing to contact their equivalent in another organisation would have to forward their request through their superiors (refer to Figure 8.1.2) and this is exacerbated when their area of authority is unclear (Section 1.4.4). Management plans that are now being introduced are a positive step towards maintaining stability in the region, but lack precision on several levels – the most fundamental being a lack of clear definition of overall goals for the Park. This underpins any management strategy and until this is resolved, tourism, economic and social conflicts cannot be addressed.

Moreover, although much of the Park management is determined locally, development decisions for the area are undertaken at the MNE, as this is where organisations submit their Environmental Impact Assessments (EIAs). The mechanism by which any development is deemed suitable or unsuitable is unclear, as frequent detailed communications between the MNE and Khövsgöl Park management do not seem to take place. During 1995 and 1996, campsites that had been agreed by Discovery Expeditions with the MNE in Ulaanbaatar were later overruled by Khövsgöl Park Authorities (Brown, 1996). An agreement for development by a larger commercial organisation could not be so easily overruled.

A Geographical Information System (GIS) held between the MNE and the Khövsgöl Park administration would encourage and allow detailed conversations to be undertaken about any developments. At the very least, it would give a standard spatial area upon which to describe potential developments, enabling those who don't know the area, to pinpoint sites accurately. It would also encourage those producing EIAs to be more precise about potential impacts. Currently, there is no clear definition or expectation of what an EIA is or should look like (Wingard, 1995).

A GIS would also enable more effective communications between the Khövsgöl Park administration and the MNE. Although Park rangers in the field may draw upon their detailed knowledge of the area to decide upon appropriate management strategies, this is frequently not documented and does not hold any weight of authority with the MNE when discussing developments worth millions of Tg. The use of a GIS as a tool to describe and illustrate suggested outcomes, immediately strengthens the decision making process through documentation, and therefore, 'accountability'.

A management strategy for this region needs to encompass data about all landscape facets, including social and cultural information, and be flexible in terms of directives. To this end, a Geographical Information System (GIS) could be utilised, in order to manage, manipulate and analyse the database. Chapter 5 outlines the basis for this technology, and its application to a tourism development strategy.

Chapter Five

GIS

Chapter Five
GIS

5.1 Introduction

This chapter will show how a Geographical Information System could be utilised as part of the Khövsgöl National Park planning process. This involves discussions on a number of different levels. Firstly, the nature of GIS will be examined in terms of an overall view of its major components and how these work. Secondly, the chapter will address the management aspects of GIS in terms of its integration into the management hierarchy and its use in the planning process. Finally, the role of GIS in tourism management will be discussed, which will give examples of real-world problems that a GIS could be used to explore. It will also demonstrate how data from this research might be integrated into the GIS and why this is a significant contribution to knowledge.

This chapter is not meant to be a manual of GIS, but is necessary as a method of describing scientific and computational arguments with respect to the Khövsgöl National Park. This is essential in order to justify later debate about the most practical manner in which GIS could be used in decision-making.

5.1.1 What is a Geographical Information System?

Geographical Information Systems (GIS) have been described by DoE (1987) and Aronoff (1989) as computer based tools that are used for the capture, storage, integration (Shepherd, 1991), manipulation, analysis and display of data which are spatially referenced to the Earth. A GIS can integrate many different types of data, from different sources, which makes it useful for analysis and problem solving. Previous methods of data analysis have involved the hand drawing or overlaying of maps showing different aspects of the environment and tourist 'hotspots'. However, this is time-consuming and, therefore, very costly in terms of manpower. In addition, the map, in a resource inventory, is a snapshot in time affected by the particular discipline of the surveyor. Addition of new data causes the map to be redrawn. At the same time, it becomes economically prohibitive to produce a map which shows each set of data, and their interaction with every other set.

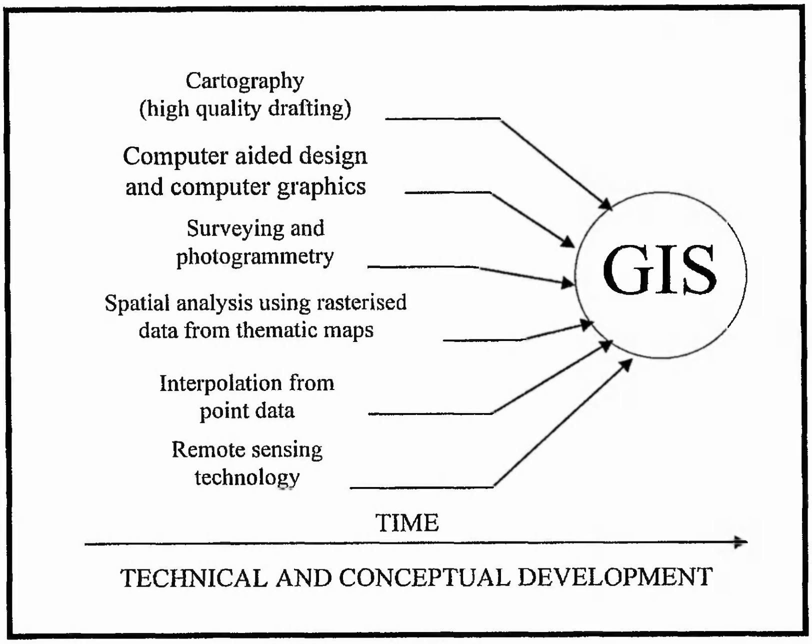
Therefore, tourism management plans are invariably constrained by the funding and manpower resources that were open to them at the time of definition. After the survey of resources and market forecasts, all further conclusions and planning are based upon these results. In a rapidly changing tourism environment, the data can be redundant even before the management plan has been implemented.

Additionally, decision-making can only take place using the available data and it may be very expensive or complex to integrate manually all data, so there is an inherent tendency to overlook data that cannot be easily taken into account at the comparison stage, e.g. more qualitative data. There is inertia against the updating of information from this comparison stage, and in order for new information to be taken into account, the whole process needs to be re-run. This is costly, and leads to time limits being attached to management directives, in the form of the five year and ten-year plans (Wingard, 1995). Long term management directives are limited in their response time to new features or developments within the environment.

A GIS overcomes a number of these constraints by holding data in a computerised database which is either part of the GIS software itself, or by accessing a standard relational database such as Oracle or Ingres. The system takes advantage of the computational power available to generate and manipulate maps, images and statistics in a much more efficient manner than by manual production. Thus, the benefits of a geographical information system depend upon linking different datasets together. (DoE, 1987)

5.1.2: Historical Origins of GIS

GIS evolved from the need that was perceived in a number of disciplines, to manipulate large quantities of spatial data (Figure 5.1). It was a natural direction for several disciplines, such as geography, cartography and computer aided design (CAD) to take as each have extended their spheres of influence towards this common goal (Coppock & Rhind, 1991). As a result, although the overall functions of different GIS's are similar, the methods by which they capture, store and analyse data can be markedly different. This is what distinguishes one GIS package from another when considering which to use for a particular problem. This is discussed in detail in Section 5.3.



(Burrough, 1986)

FIGURE 5.1: Historical Origins of GIS.

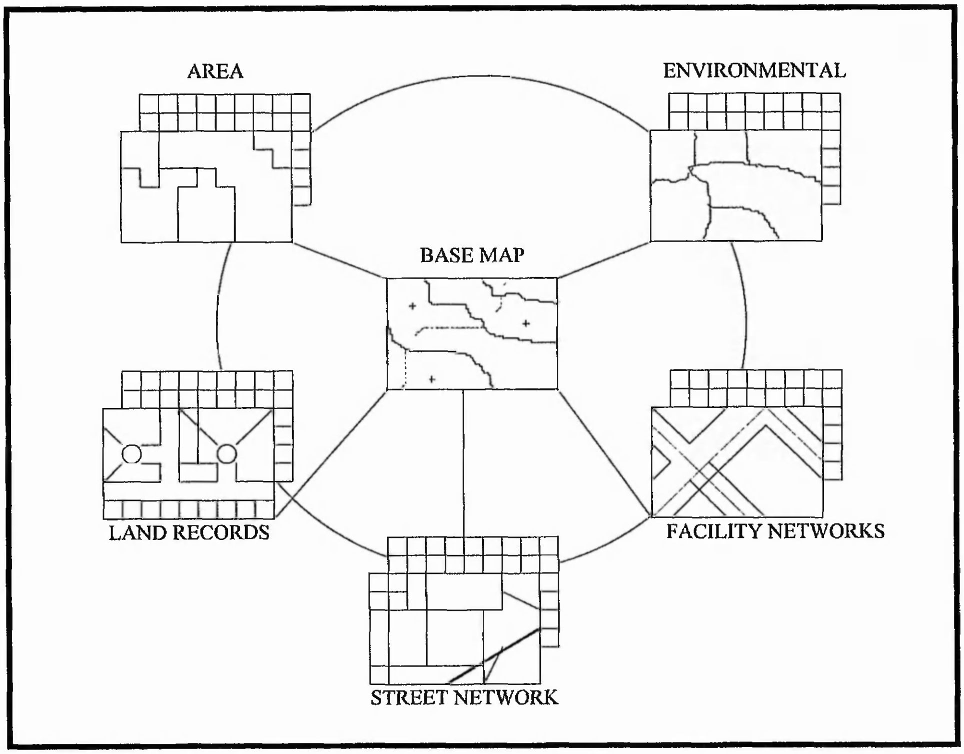
Geographical Information Systems which have been developed from the needs of the image processing community (Jordan *et al.*, 1992) tend to have a different manner of handling data than those developed from the needs of the CAD (Computer Aided Design) community. As such, one focus of GIS research in recent years has been to integrate these different interfaces, so that data can be more easily exchanged between applications. Several GIS packages are now taking a 'modular' approach (e.g. Intergraph), whereby the core package supports main GIS features and there are a number of add-on modules for more specialised tasks such as image processing, borehole logging and volumetric display, etc.

5.1.3: Applications of GIS

A Geographical Information System is used to handle and analyse data that are referenced to a geographic location. This is its key strength and the capabilities of the system are most apparent when the volume of data is too great to be handled manually. There may be thousands of different features to be considered or cross referenced against each other and a GIS is able to assimilate this data into existing analysis far more easily than a manual method already in progress. Moreover, this continual ability to assimilate ensures that data can be kept as up-to-date as planners require. New data does not have to wait until the next round of planning to be integrated (Kliskey, 1995 and Klosterman, 1995).

Some applications of GIS are now considered, relating to a number of different projects on increasing scales. On a local scale, GIS might be used to manage forestry, for example to locate certain stands and estimate the amount of timber that might be produced in a given area, or to monitor health, through the integration of remotely sensed data (Davis & Simonett, 1991) in the Infrared spectrum (for example, the Scottish Highlands).

Regionally, many town planning departments now utilise a GIS in order to keep track of developments, and to assess the potential effects of new proposals. Figure 5.2 illustrates the elements that a municipal database might hold. A base-map is created, which defines the limits and boundaries of the database and topography of the region. Other maps, each of particular landscape features, are then created and linked to the base map. This may be environmental aspects of the region (types of agriculture or soil), networks of amenities (roads, water and electricity routes), and land records which outline ownership of each land segment (Adinarayana *et al.*, 1994). Each set of data can then be interrogated with respect to every other set.



(Aronoff (1989).

FIGURE 5.2: Conceptual Design of a Municipal DataBase

This information can then be used for scheduling maintenance activities or assigning police control areas. Commercial companies are also able to target potential consumers. Using postcode data, they can effectively mailshot each household in any given area, or select those households that fulfil certain criteria (Carver, 1991).

A national example of a GIS might be the CGIS (Canada Geographic Information System). This was perhaps the first example of GIS in operation, and was developed in the late 1960's. The project objectives were to develop a national land capability classification for potentially productive land in Canada. Categories such as forestry, recreation and wildlife were later added, and the system now operates as a component of the CLDS (Canada Land Data Systems). This provides analysis services to national, provincial and municipal agencies.

In Europe, the CORINE (Co-ordinated Information on the European Environment) system is being developed for the European Community for similar analysis of agricultural land use within the European Union. On a global scale, the Digital Chart of the World (DCW) project (ESRI, 1996) has built up a database which covers the whole planet, and which is available to the military and researchers as a tool for integration with other regional data.

For Khövsgöl National Park, the GIS database would encompass demographic, environmental, fish and wildlife management, forestry, land registry, transportation and mineral location data (Figure 1.17). This data can then be integrated and queried with respect to each other

5.1.4 The Data Stream

The GIS system (Figure 5.3) is composed of a number of modules dedicated to the storage, manipulation and analysis of spatial information. Data may be input to the GIS in one of four ways. Firstly, it may be typed in (keyed), for example in the input of statistical information, or the uploading of lists of names or addresses. Secondly, analogue information such as aerial photographs may be scanned. Thirdly, information such as maps may be digitised. This involves the clicking of a pointer over map features, which are transferred onto the computer screen. Digitising is time-consuming, as each feature of the map must be traced with the pointer. Finally, remotely-sensed digital images such as satellite data may be georeferenced[1] before input to the GIS (Dobson, 1993 and Ehlers, 1991).

The database is managed by the Database Management System (DBMS). This module keeps the data in order, restructures it, and calls it up in response to a query. Data may then be modified and analysed by the Spatial Decision Support System (SDSS) which is the main role of the application software. Spatial queries can be made of the database and the results output to the screen, or other medium.

[1] A process by which the satellite (or other) data is spatially referenced in respect to other data present in the database. The GIS is then able to allow the analysis of other data in conjunction with the satellite data.

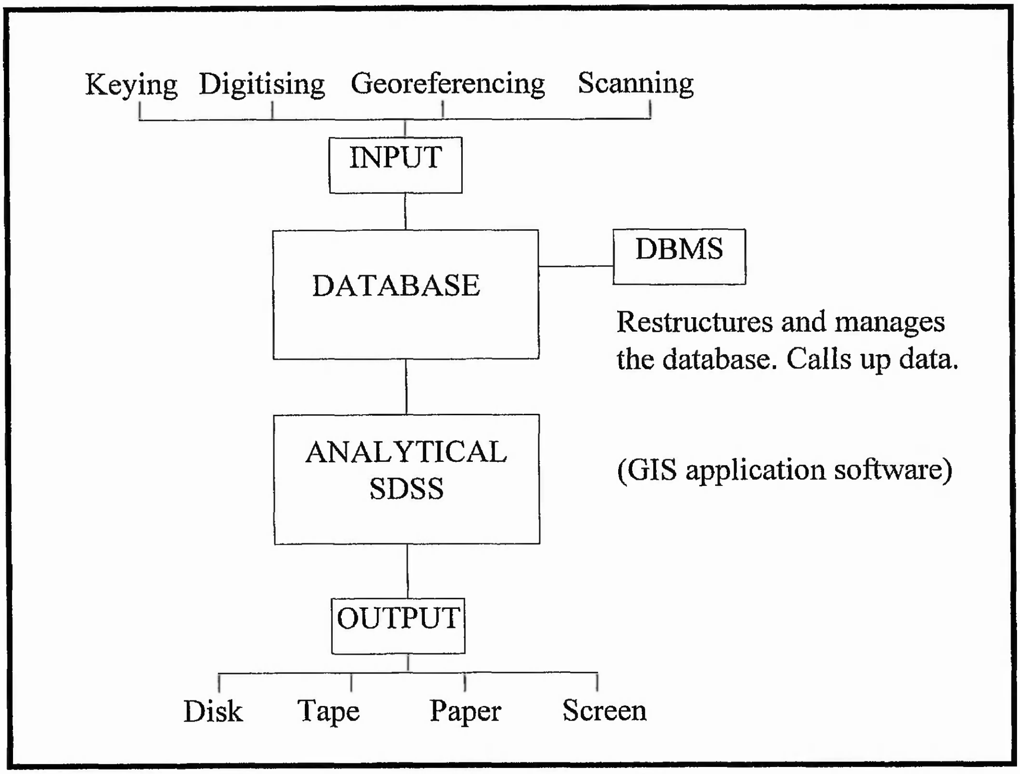


FIGURE 5.3: GIS Framework

The advantages that a GIS holds over a traditionally manual process, are the speed at which analysis can be performed across all the data available and the flexibility of output. This makes decision-making a much more 'visible' process, with the basis for each decision having documentation, which would show how managers arrived at their judgement. New data can be input to the database and taken account of in existing management plans; therefore, decisions need not be static, based on one set of data, but can change over a period of time to take into account the changing nature of tourism. Thus, long-term planning becomes more flexible and more adaptable.

However, there are some problems inherent with the use of a GIS. There is a temptation to believe that because the output produced by the GIS is of such good quality, the data is of similar standard, when in fact, the data quality may be poor but displayed well. This issue of data quality develops because the database has only the accuracy of the poorest data, since other data may be analysed against this. Thus, a set of data with poor accuracy may propagate errors across the analyses performed. One way of mitigating these effects is to attach a metadata file to each set of data. Metadata contains information about how and when the data was collected, and its expected accuracy (Section 5.2.7). Additionally, the use to which the data will be put should also be taken into context. Data that are highly precise are not necessarily required for some projects, and may only increase costs.

Metadata enables decision-makers to decide whether the datasets they have chosen are suitable to be analysed together and also, what emphasis to place upon the outcome of analysis, in the context of other analyses they have undertaken. Some subjective states, such as 'social and cultural sensitivity to tourism' should not be 'mapped' even if a definition of 'cultural sensitivity' could somehow be agreed upon. However, it would be acceptable to map the locations of households who had responded to a survey question asking if they were happy to see tourists, or whether they would like employment in the tourism industry. As well as being useful to monitor changes in household responses (changing perceptions), it would also alert managers to the feelings of local households, should particular developments be located in the area. If the National Park authorities were trying to encourage the employment of local people, rather than the influx of labour from outside the region, then it would not make sense to locate a tourism development in an area of the Park where the local labour force weren't interested in taking employment.

Some sorts of data that cannot be represented spatially in an appropriate manner, can still be recorded within the GIS, either by linking responses to a particular household (where it is the household that is 'mapped'), or by tying the information to one of the tables in the database based on some other criteria. This information could then be accessed by National Park GIS Managers when looking in detail at specific areas of the National Park; perhaps for a proposed development. Much information may well be already known by local people or National Park Rangers, but often, decision-making about proposed developments comes directly from the Ministry for Nature and Environment and they do not know, or place less emphasis upon, such information – if indeed it ever reaches them. If this information was also available in some form within the GIS, it would also be available to the MNE managers and decisions could be made upon a factual basis. Decision-making would also be documented and the input of local people into the decision-making process would be raised, enabling them a greater stake in the development of the region.

The use of GIS may also be constrained by the various methods of storing and manipulating data. Some types of GIS can only accept data in a number of recognised formats, and it is very difficult to interface them with data that has been analysed by another GIS system. This situation is becoming less important, as standardisation across hardware and software platforms occurs. Further, implementing a GIS relies heavily upon an initial influx of time, money, people, equipment and data and requires managers who are willing to invest all these for the sake of the long term benefits. Moreover, it should be noted that GIS also affects management structures and procedures (Section 5.6).

In summary, the costs and benefits of GIS can be highlighted by Table 5.1. These issues are explored in more detail in Section 5.6.

Benefits	**Costs**
• Easy to undertake complex mapping tasks • Savings in time • Savings in storage space • Fast data retrieval • Ability to keep maps more up to date • Interactive map production • Customised maps • Quicker *(probably)* • Cheaper *(questionably)* • Less data duplication in organisations • Ability to combine and analyse data in new ways.	• Initial costs may be high • Data input can be time-consuming • Time needed to learn the system • Lack or cost of available digital data • Data standard / format • Organisational changes involved. Interdepartmental conflicts • Training

TABLE 5.1: GIS Benefits and Costs

Savings in time are expected to be achieved, since the production of a traditional management plan (Figure 4.1) involves a paper based analysis of 'what if' scenarios, and the development of a plan for a number of proposed policies. Within an established GIS, data collection can be continually input to the database so that any decisions are always undertaken on the most up-to-date datasets. Complex scenario modelling can be undertaken, giving a more precise and speedy output than paper-based mapping. A number of proposed policies can be modelled separately and compared using whatever criteria the GIS operator chooses. In this sense, the savings in time over traditional methods are substantial.

However, initial costs in time of setting up the GIS, training operators and gathering the data in the first instance are likely to be greater than the time cost of producing a traditional management plan. It is not possible to produce an estimate of the number of person hours gained or loss through the use of a GIS, as this would depend to a great extent upon a number of highly specific factors. These might include the number and ability of staff able to work on the project, the amount of resources dedicated to the project, the quality of training provided, the availability of data and the availability of suitable hardware and software. The use of a GIS could outweigh the benefits of traditional methods, in that it has provision for greater public participation and greater accountability and documentation of decision-making. Both of these are important if development in the region is to be sustainable.

This discussion will now explore the different areas of GIS (Figure 5.3) and examine different aspects of the GIS system, Input (Section 5.2), Database (Section 5.3), Analytical capabilities (Section 5.4) and Output (Section 5.5).

5.2: Input

The data capture process can be divided into two different sections. Primary collection takes place from remotely sensed imagery, such as aerial and satellite photography (Jackson & Woodsford, 1989 and Faust, 1991), GPS[2] (Global Positioning System) measurements and survey or questionnaire data collected specifically for the purpose. Secondary collection takes place from existing maps (Jackson & Woodsford, 1989) and information from existing surveys and reports.

Each point of information must be spatially located within the GIS database, or be linked to the spatial data (attribute data). The manner in which the primary and secondary data are input to the GIS database depends both upon their form, and upon the structure of the GIS being used. However, all data must be transformed from an analogue format, to a digital one, which the GIS can integrate in relation to the other data. Existing digital data may have to be transformed in order to be integrated.

5.2.1 Keying and Downloading

Keying consists of manually entering data into the GIS database, for example, the results of a survey or questionnaire. Some information, such as census or postcode data may already be available in a digital form from a commercial supplier, but may require transformation into a particular digital format that the GIS database can handle. It is a method generally used for attribute data, with the exception of COGO (Co-ordinate geometry procedures), which requires the entry of explicit measurements of features. This is useful for precise property descriptions and has a high accuracy. However, it is six to twenty times more expensive than digitising (Aronoff, 1989).

Surveys yield a controlled source of data but tend to be copyrighted to the person who has acquired it, which may make acquisition and use of the data in other situations difficult and costly. Many organisations undertake their own surveys which are poorly disseminated, as they are considered internal documents. There is also likely to be a lack of (or very poor) documentation.

A second source of information is 'soft' or qualitative data. This includes material such as literature, film and sound recordings, and legal documents. Each of these needs to be spatially referenced by the user in order to integrate them into the GIS database. They are an invaluable source of social and cultural heritage - in particular for Khövsgöl, due to the lack of other types of data - but they are generally poorly documented which can lead to issues of error propagation.

A third type of information is from statistical sources, from digital databases, archived data and local authority records. However, they must be continually checked for deviations in quality, which can be tedious for large databases.

Finally, it is possible to transfer and collect data if it is held within another electronic database, which would avoid repetitive keying jobs. This may be one of

[2] Global Positioning System – the manner by which objects can be referenced on the Earth's surface.

the online databases, for example NOMIS (National Online Manpower Information System). There are some negative aspects to this, as it is difficult to correct errors (data corruption) and, in the past, there have been problems of incompatibility due to the use of the data in different formats across different platforms. Recently these interfacing difficulties have been bypassed by a number of translation programs that are available, and the standardisation of many platforms towards a Windows environment.

In the case of Mongolia and, in particular, the Khövsgöl National Park, there is little tabulated data available, apart from that which appears in scientific journal articles produced by the Russian-Mongolian Expeditions over the past 20 years. These data may be sufficient to outline some animal or plant habitats. 'Soft' data concerned with local communities is presented in Chapter 1 and is mainly focused upon the status of the economy in Hatgal. There is little specific information about the extent to which local people move during the year (where this information is spatially referenced), although a number of authors have discussed movements, more recently Harper *et. al.* (1996). This research will address this imbalance through the collation of information about semi-nomadic movements by local people and the georeferencing of households in Khövsgöl National Park.

5.2.2 Remotely Sensed Data and Georeferencing

Remotely sensed data incorporate both aerial photography and satellite imagery, both of which are captured from a 'stable' aerial platform, and are also sensing one

For a further discussion see section 5.2.3.

or more wavebands of electromagnetic radiation reflected from some part of the earth's surface (Pauknerova et al., 1992).

Satellite imagery is composed of cells or pixels, which represent some area of a particular size on the earth's surface. The actual resolution of the imagery depends upon which satellite produced it, since resolution depends the sensors that were used, the altitude and the direction of view. In addition, the contrast that an object has with its surroundings will also influence what can be seen. Something that contrasts strongly with its surroundings may be visible, even though its total size is less than the size of the pixel it is in and, similarly, an object that is greater than the size of the pixel may not be defined if it does not contrast with its surroundings. Moreover, the effects of the atmosphere, topology of the surface studied and angle of the sun are all influential in determining the information that the sensors are able to record.

The resolution of satellite imagery may range from scales of 1:25,000 to virtually global coverage. Some satellites, for example Landsat 4 and 5 carrying the Thematic Mapper sensor (Curran, 1985) can be programmed to track certain regions of the earth's surface at specific time intervals, building up a temporal database.

In digital form, satellite imagery is logically compatible with a raster-based GIS, but requires additional processing to enable it to be associated with a vector-based GIS with the same degree of integration (section 5.2.5). Aerial photography is produced in an analogue format on special film, which is sensitive to a particular wavelength of radiation. It must be scanned, or some elements of it digitised, in order for it to be integrated into the GIS digital database. Aerial photography can give resolutions of 1:50,000 to around 1:5,000.

However, the volumes of data produced by satellite are huge, as each scene is usually collected in several wavebands. This presents problems for the storage of such large amounts of data and the processing of the images to enable them to be integrated within the database being used (which may require sophisticated and expensive software), or the cost of this analysis being done by an outside commercial body. In Mongolia, satellite data are held by bodies such as the Geological Survey. However, data are considered to be important, and sharing of this information within Mongolian organisations is subject to bureaucracy.

Remotely sensed data must be pre-processed to correct geometric (positioning the image to match the geometry of other data in the database), atmospheric ('cleaning' the image to compensate for water vapour in the atmosphere), illumination (where the slope and aspect of the target is misrepresented due to the angle of view of the sensor and solar elevation), and cosmetic distortions.

5.2.3 Global Positioning System (GPS)

GPS consists of 24 orbiting satellites, each broadcasting its position and the exact time (Mather, 1987 and Allan, 1995). A GPS unit is a small, hand-held device that is able to analyse these broadcasts from satellites of fixed geostationary orbit, and determine its own position. Three satellites are required to triangulate a position, and four or more allow the GPS unit to calculate a third dimension of height, and increase the accuracy of its calculations. These units have been used as navigation aids for ships at sea and, also are becoming increasingly used for navigation by trekkers in remote areas.

GPS fulfils the function of being a light, mobile unit that can accurately determine the position of any given feature. It is, therefore, invaluable for georeferencing data for a GIS. Certain features can be 'fixed' on the ground (Gumbricht *et al.*, 1996), their actual co-ordinates being known for every piece of data in the GIS (for example, the location of households in Khövsgöl National Park - these are transitory but can be located at any time of year). When a number of well-distributed ground control points (GCP's) have been registered, data can be transformed to fit the co-ordinates.

5.2.4 Scanning

Scanning is one method by which spatial data may be converted into a digital form. Attribute data can also be scanned, and the image transformed into text by an OCR (Optical Character Recognition) program. The scanner translates an analogue image, for example, an aerial photograph into a raster (composed of pixels) form. This occurs as the scanner builds up intensity values across the image, resolution being from 300 - 3000 dpi. The scanned image has the same accuracy as manual digitising, but is 2-10 times as fast. However, the scanned product is only as good as the original image and so works best when the primary image is clear and clean.

For example, the width of a line or 'river' may not signify the correct spatial dimensions and so its location is then imprecise.

Due to the resolution of the scanner and quality of the image, two intensities may be recorded as the same, but their attributes may be different. If the shading on the map is not solid, this will not be recorded correctly, and will impede the accuracy of the end product. Scanners also tend to distort images at the edges, which may become very important if a number of images are intended to be edge matched and linked together. Post scan 'cleaning' operations may then be needed in order to reach the level of accuracy defined for the database. In this instance it is expected that maps will be scanned on a large scanner. However, maps gained from Mongolia were very low quality and so the level of accuracy defined for the database will automatically be low. Small variations in scanner performance will not necessarily decrease the overall accuracy of the dataset (section 5.2.6).

A number of 'automatic digitising' programs work by using the scanned image of the data as a backdrop and, employing knowledge-based "intelligent" vector drawing algorithms to trace over the backdrop, producing data in a vector format as a normal digitiser would do. The advantage of these systems is the tremendous amount of time that can be saved compared with manual digitising. It is likely that there is also a considerable increase in accuracy, as the digitising is not subject to human error. However, the accuracy of the end product depends upon the accuracy of the original scanning and, thus, upon the quality of the base document.

5.2.5 Digitising

Digitising is also a method for transforming spatial data into a digital format. There are two forms of digitising; manual and automatic (Section 5.2.4). Manual digitising takes place with a cursor and tablet or table. The table digitiser usually has many wires embedded in the form of a grid into it and it electronically locates the position of the cursor over its surface. When a map is fixed to the table, the location of features can be traced by the cursor, point by point, and attribute data included, by means of a number of other buttons linked to the cursor. The co-ordinate data generated can be stored for analysis later, or linked directly into the GIS for online editing.

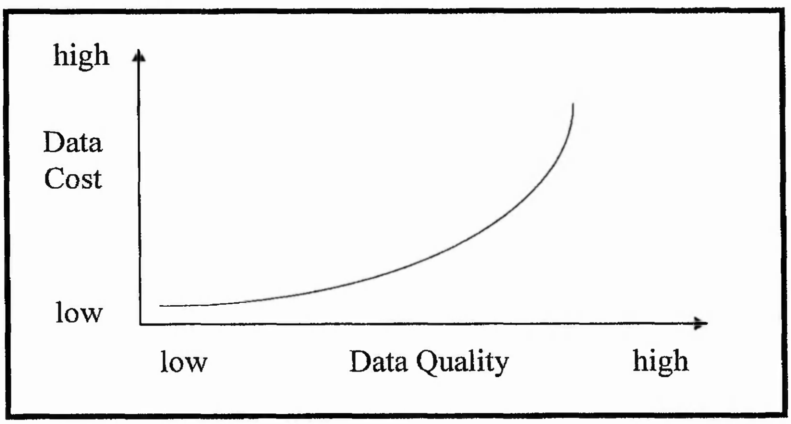
The main sources of error inherent in digitising are the quality of the digitising hardware and software used and operator error. Manual digitising is very tedious, and data quality can be reduced if digitising is conducted in a sloppy manner. However, it is a very easy system to learn, and so labour costs are low. Manual digitising of Protected Areas (from Russian maps) is already taking place in the Ministry of Nature and Environment (MNE) in Ulaanbaatar, but it is a slow process.

Compared with scanning, manual digitising involves cheaper hardware and software is usually included as part of a standard GIS. Scanning, however, involves a separate program to operate the scanner. Digitising is also able to take advantage of maps of poorer quality, which would not have been able to be scanned without significant re-drafting. Scanning may be much faster, but it produces maps in a raster format and may subsequently require translation into a vector format for input into a vector-based GIS (Carver & Brunsdon, 1994).

5.2.6 Data Quality and Sources of Error

"Geographical reality is infinitely complex, and an infinite number of items of spatial information can be generated from a single variable such as topographic elevation, by measuring elevation at an infinity of distinct geographical locations."
(Goodchild *et. al.*, 1991:2)

It is impossible to record geographical reality in its entirety and so what information is collected goes to make up a 'model' of reality. Error is, therefore, inherent in this. Error may be defined as a deviation (or distance) between a measurement and the 'true' value (Chrisman, 1991). What degree of error is defined as acceptable (data quality) depends upon the use to which the data are to be put. There is a trade-off between the highest quality data which costs the producer greatly in terms of manpower and storage space, and that data which are cheap to collect and take up little storage space (Figure 5.4). It is important to define the quality of the data required to solve the problem.



(modified from Aronoff, 1989)

FIGURE 5.4: Increasing Cost of Data with Quality.

It is also important to highlight the differences between precision and accuracy, where precision is a statement of the smallest unit of measurement to which data can be recorded, and accuracy is the statistical likelihood (probability) of a measurement being the true value, or within a defined range of the true value. Thus, data can be very precise, while also inaccurate. If there is no measure of error, then there is no method for the data to be improved in the future. In each phase of the data stream, through collection, input, storage, analysis, output and decision-making, there is some form of error created as the data are modified in some way (Figure 5.5).

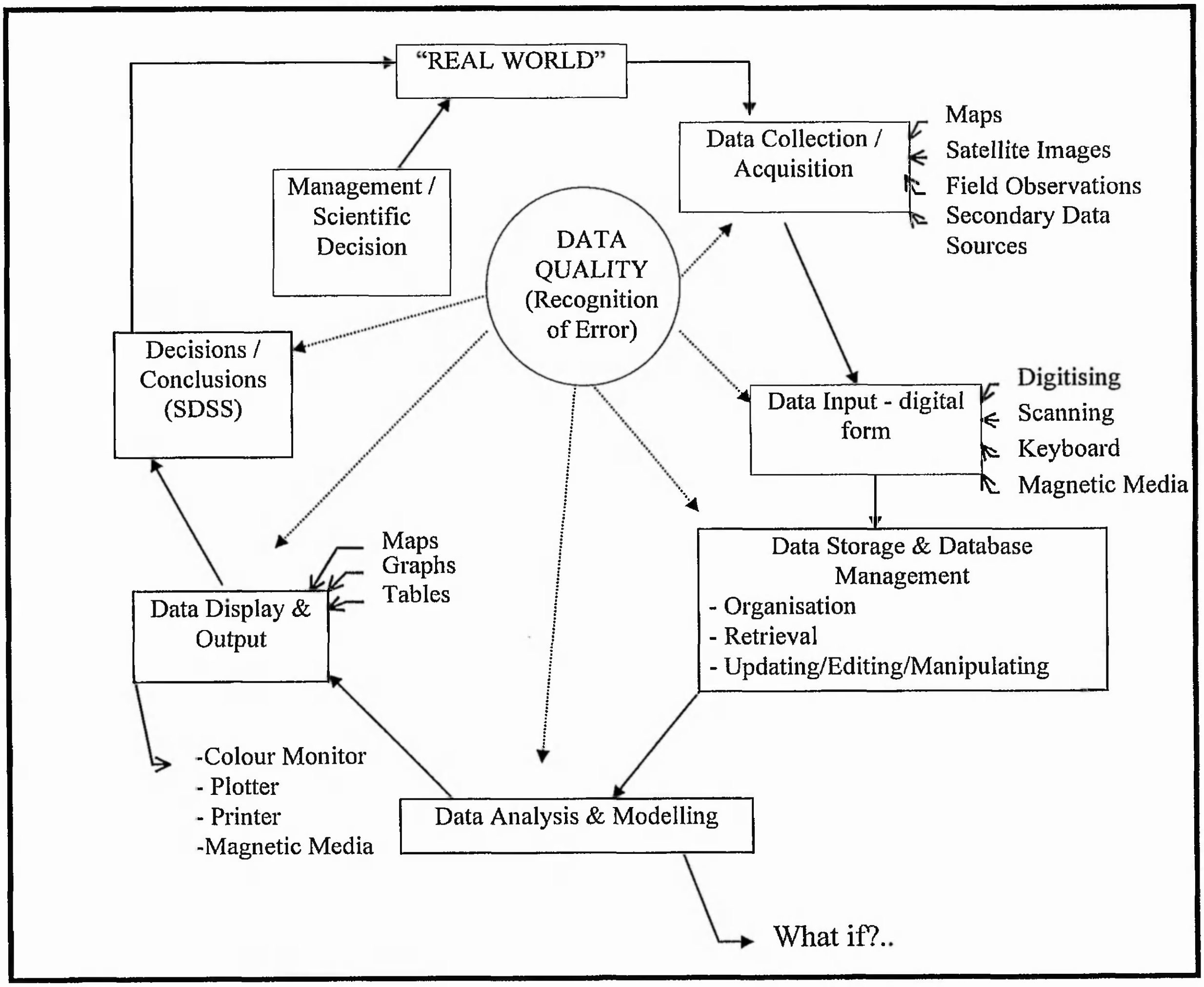


FIGURE 5.5: Sources of Error

Data error occurs through miscalculation, but also through misclassification and inappropriate processing. There may be some misclassification of data, either manually or automatically; for example, remotely sensed data may be classified so that shadows due to the topology of the land are miscoded as a type of vegetation, since the surface reflectance is very similar. Field data may be measured very precisely, but under or overcount certain criteria. The UK Census is a precise estimate of population, but consistently undercounts, due to problems of illiteracy or homelessness. Census data are also recoded to prevent identification of an individual. Data that has been classified for a particular task may not be appropriate when used for another purpose for which the classes are not accurately defined. The classification may also be too coarse for the task, and the level of detail needed, not available. It follows that data which are out of date, or which have themes or areas updated at irregular intervals will also be inaccurate. Thus, it is important to define the specific data requirements of a project (Table 1.17). Additionally, data must be managed effectively to ensure that the most up-to-date information is always used and that older information can be tracked in its usage. One way of achieving this is through a metadata file for each dataset (Section 5.2.7).

Spatial data are also subject to errors. During digitising, error may be created through lack of precision by the digitising software, and also by the operator. Different operators may digitise in different styles, compounding the number of possible errors, whereas a single operator, while making errors tends to make consistent ones. Scanning and digitising also rely upon the geometric accuracy of the source document which, itself, will have been subject to some margin of error.

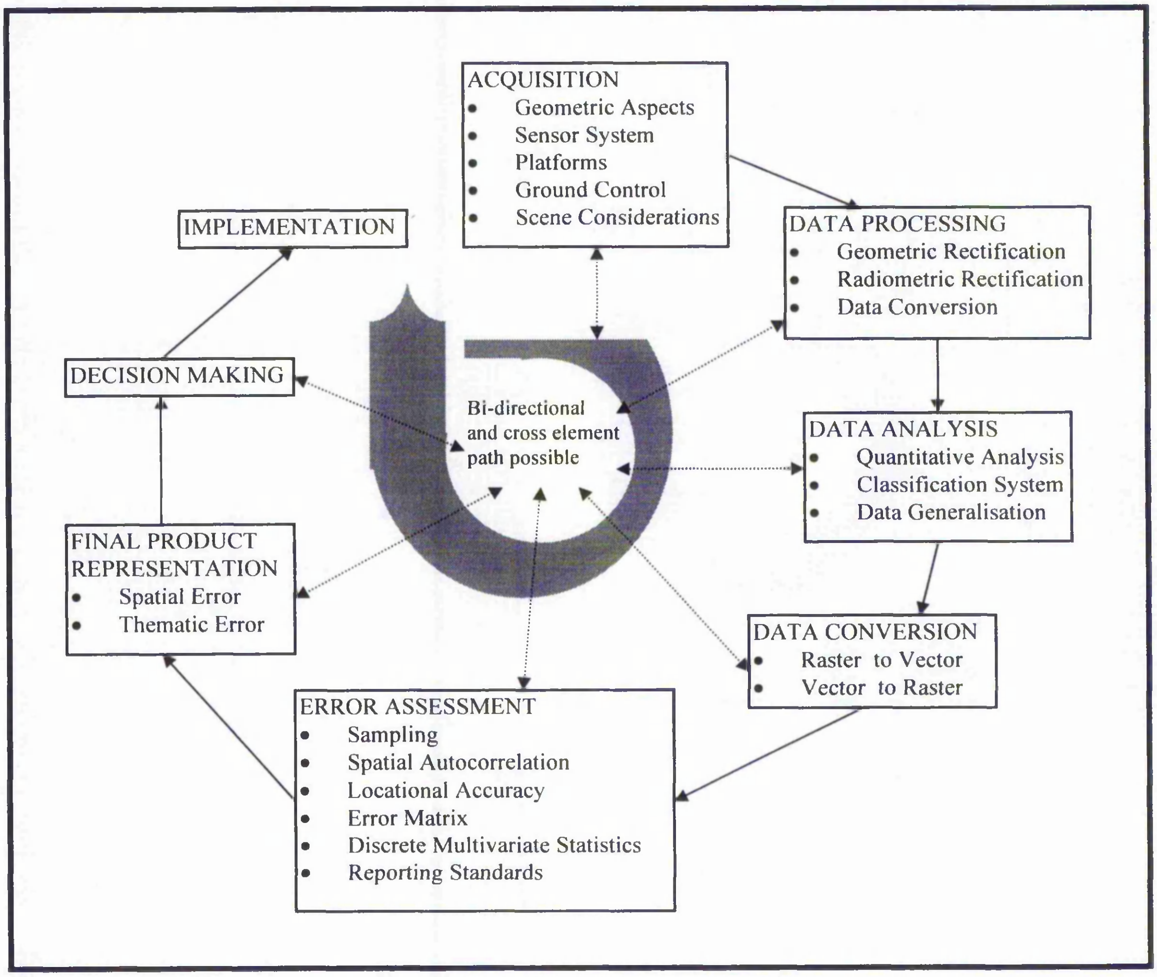
It is likely that Russian maps (1:10,000 to 1:100,000) may be digitised. The ICC (Information and Computer Centre) in the MNE itself would be the logical environment for this to be carried out, as it has trained operators, each with a number of years experience, large-scale digitising tablets and modelling facilities (Gruys, 1996).

Satellite data may be collected at different resolutions; for example Landsat data that generates a pixel size which represents an area of 30m may have to be integrated with a map giving 50m resolution over the same area. Analysis can usually only occur at the coarser resolution and so there is a loss of precision. To increase precision, it is best to record data at the finest resolution possible, as the database is only as accurate as its least accurate piece of data. The balance of accuracy to cost must be realised as it depends directly upon the end purpose of the database.

During data conversion, the process of exchanging data between raster and vector formats introduces new errors. Vector to raster conversion is conceptually simple, but always involves a loss in resolution (Carver & Brunsdon, 1994). Boundary cells may represent more than one attribute, and it is difficult to decide whether attribute *a* or *b* should be given to a cell. Curved lines become blocky, as they are transformed into a line of cells, and in general, spatial precision is lost. During raster to vector conversion, because the phenomenon of interest is assumed to lie directly in the centre of every cell, an excessive number of vertices is are produced, as each cell must be defined, and then a 'weeding' process applied to remove unnecessary points. There may also be a blocky appearance to boundaries, which can be compensated for by using a 'spline' (line of best fit). However, this does not give any more accuracy, and may even result in a loss.

During data analysis and manipulation, errors are largely generated by the use or misuse of software algorithms. Franklin (1992) suggested that 50 percent of the time used to develop software is taken up by debugging and testing it, while the same again is spent on maintenance during its lifetime. An incorrect algorithm (or use of formulae), or logical inconsistencies (incorrect order of operations) may create problems with the resulting data, as will any inappropriate methods for particular data types, for example calculating the mean from ordinal data. Thus, the efficacy of GIS depends largely upon the operator in choosing the most appropriate data and tools for analysis from the selection that are available to him or her (Section 5.6.3).

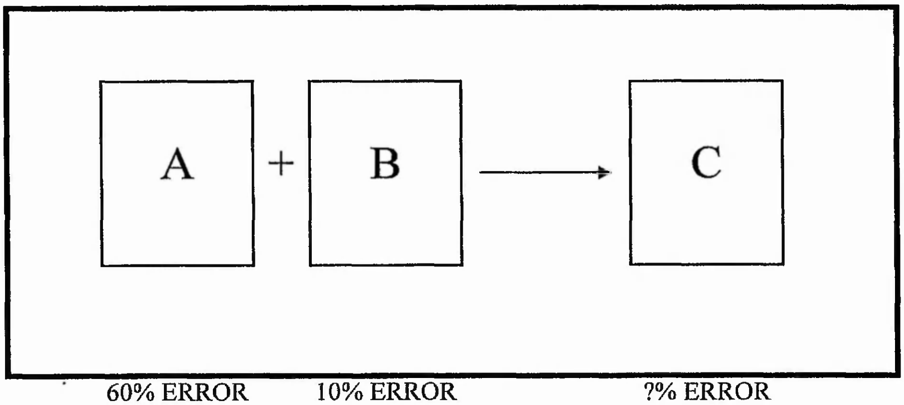
Some algorithms may be less robust and particularly sensitive to data errors. In this way, errors can propagate through the system (Figure 5.6). In this way, small errors in positional or attribute accuracy occur at the beginning of the cycle, and then become greater, as the data goes through the processes of conversion, analysis, and presentation.



(Lunetta *et al.*, 1991:678)

FIGURE 5.6: Propagation of Error with Continuing Data Processing

Defining the amount of error inherent in a database is very important as it provides some sort of reference to underpin the decision-making process. However, it is very difficult to predict data error. Consider data 'A' and 'B' in Figure 5.7. When they are combined to form data 'C', it is difficult to calculate how much error they will produce. More information would be required before this could be predicted, as both errors could increase, or one data source could offset the errors in another.



(CCGISE, 1990)

FIGURE 5.7: Definition of Error

Overall, accuracy is about balancing requirements of the end product with project costs. Project managers must be realistic about how accurate a database is required and what can be achieved. One way in which these decisions can be made is the inclusion of Metadata.

5.2.7 Metadata

Metadata is data about data. It is an additional file, included with the data set, that gives the user information about the general content of the data set, and thematic and use restrictions. It may define the horizontal and vertical co-ordinate system used and the accuracy of spatial data features and associated attributes. It may also include the source documents used to compile the data, procedures and parameters used to convert those documents into the digital data sets, and the status of the data set, its release date and update frequency. Additional information might include a point of contact for other questions, and the transfer format and other format options available to the end user. In this way, metadata can help the user to decide upon the sources and types of error in each data set and therefore minimise the effects of error propagation through the GIS. The National Geospatial Data Clearing House is a site on the Internet where contributors give descriptive metadata about their spatial datasets. Users may then be able to register requests for data, which is then logged as an area of development.

Maps for the Khövsgöl database have generally poor definition, and have no registration of their source or collation date, and no indication of accuracy. Although it must be recognised that errors in the Khövsgöl database may have great significance, it is only possible to indicate where and when this may occur during decision making - which is presently based upon some of this information, in any case. By attaching metadata files to each data source used in the database, it is hoped that by degrees and over time, the database will become more accurate and thus, decision-making can make more reliance upon it.

At this stage of the GIS construction, it is hoped that the level of interest in the management of the region will be raised and, as a result, more emphasis will be placed upon the collation of accurate data suitable for the task which it is intended to address.

5.3: Data Models and Databases

This section is concerned with how the GIS records and stores a model of reality - in this case, the maps and other data considered in Section 5.2. In order to create this model of reality held within the GIS, the data must go through a series of processes. Firstly, each feature is classified as one of a series of spatial entities, either points, lines, areas, networks or surfaces. This classification depends, in the main, upon the nature of the feature, but also upon the resolution of the database. For example, in a low resolution database, the presence of a settlement may be classified as a point, whereas a higher resolution database might represent the settlement as an area.

Secondly, these entities need to be abstracted into a digital form which can be recognised by the GIS; either raster or vector (discussed further in Appendix K). The choice between raster and vector, therefore, depends on the volume of data to be collected, the topology of the data, the type of spatial queries that need to be performed and the accuracy and precision required. In Khövsgöl, either vector or raster would be appropriate. Data already collected may be precise, but has a high likelihood of inaccuracy. Thus, the utilisation of a vector-based GIS confers no advantage in terms of accuracy in this instance and may serve to be misleading without proper interpretation of output. Moreover, the type of data used in Khövsgöl, such as movements of local people, are not static or reliable from one season to the next. Therefore, it is more appropriate to specify an area in which they might be active, and this can be represented equally well by either raster or vector data structures.

Finally, these digital forms are stored in the GIS database so as to allow topological and attribute information to be linked to them. The GIS queries the data to sort out the relevant information for each enquiry. The results of this query can then be displayed in a number of ways – as a tabular report, statistical chart or graphical map.

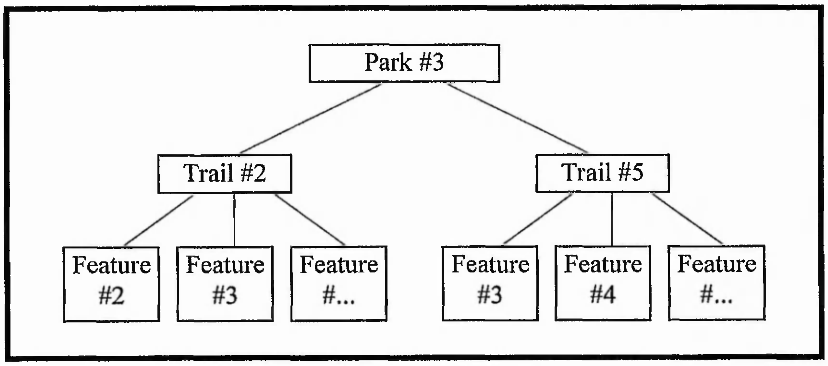
5.3.1 Database Structures

A database is a body of related data stored in a structured manner Appendix K explored the ways in which raster and vector (spatial) data become increasingly abstracted models of reality. This section addresses the issues surrounding how attribute data are stored in a database and the most efficient methods of retrieval.

At the core of the database is its method of storage and, in general, all databases store information using records and fields. A record is a group of related data items (a row) and a field is a particular type of data (column). Four structures for storing and retrieving the data in this format will be discussed here, commencing with the most simple.

Inverted list systems generate an 'index' which is a table representing a number of combinations of fields. Thus, information from one or more data tables may be combined to generate the specific information required by the user (Healey, 1991).

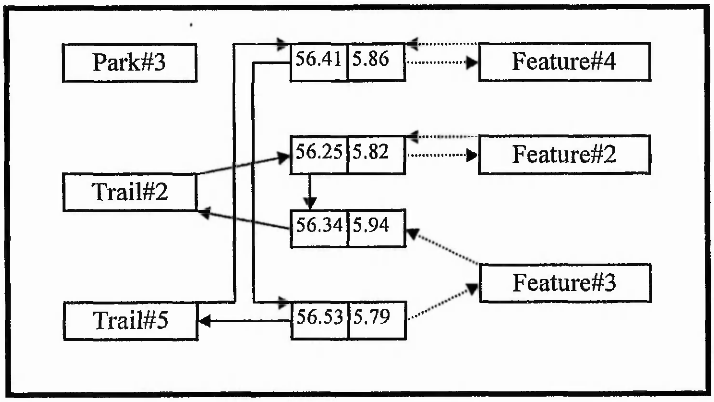
Hierarchical systems are created when the data are organised in a tree structure (5.18), with one entity as 'root', and pointers to levels (other entities) beneath this. If the information required belongs to the parent data, then this becomes a relatively simple process. However, if the information required belongs to 'child' entities further down the tree, retrieval may take much longer, as several pathways have to be followed. For a simple addition or layer in the database, a total information restructuring may be required. The example below illustrates that features visible from more than one trail have their attributes stored a number of times. This is known as data redundancy or waste of storage space.



(Healey, 1991)

FIGURE 5.8: Part of a National Parks Database in a Hierarchical Structure.

One solution to this would be to have pointers linking the 'child' entities. This would, however, violate the requirement for the tree structure. **Network systems** overcome this limitation, in that a 'child' entity may be linked to any other, and may have more than one root. In this case, data records can be searched directly, without having to follow the hierarchy above that record. All the different forms of mapping can be defined using many different pointers to represent each relationship (Figure 5.19).



(Healey, 1991)

FIGURE 5.9: Part of a National Parks Database in a Network Structure.

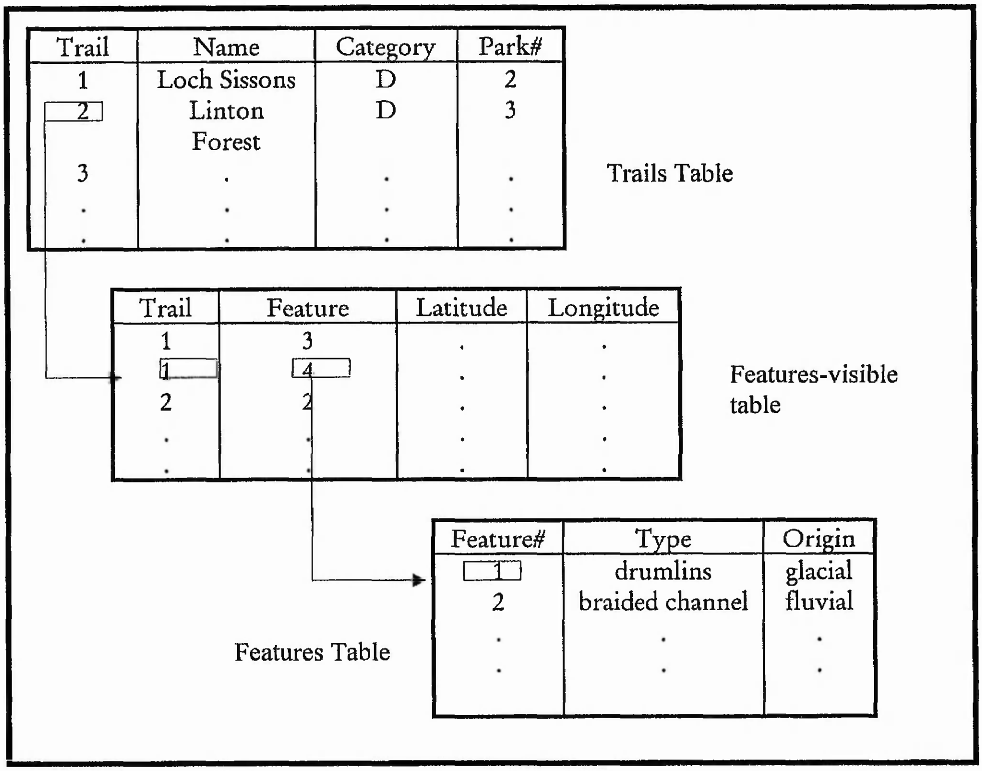
Restructuring of the database is very difficult, due to the number of pointers that have to be re-created, but tend to result in less redundant data storage as entities only appear once. Aronoff (1989:158) describes the network model as:

> "more complex than the hierarchical and not as flexible as the relational model".

In **relational systems**, each entity set is represented by a table and each row in the table is the data for a particular entity. Figure 5.10 illustrates this using the entity set 'trails', each row representing one of the trails in the park. Each column holds data on one of the attributes linked to 'trails'.

Searches of related attributes that are stored in more than one table takes place with a process called 'relational joining'. Values in one column (or attribute) are linked with their equivalent in another table, from which more data can be retrieved. This matching can take place through as many tables as required to satisfy the parameters of the query.

An advantage of this type of database for GIS, is that new information can be added without a complete restructuring of the database. Data retrieval is flexible since it relies on relational joins being created by the program for each individual query.



(Healey, 1991)

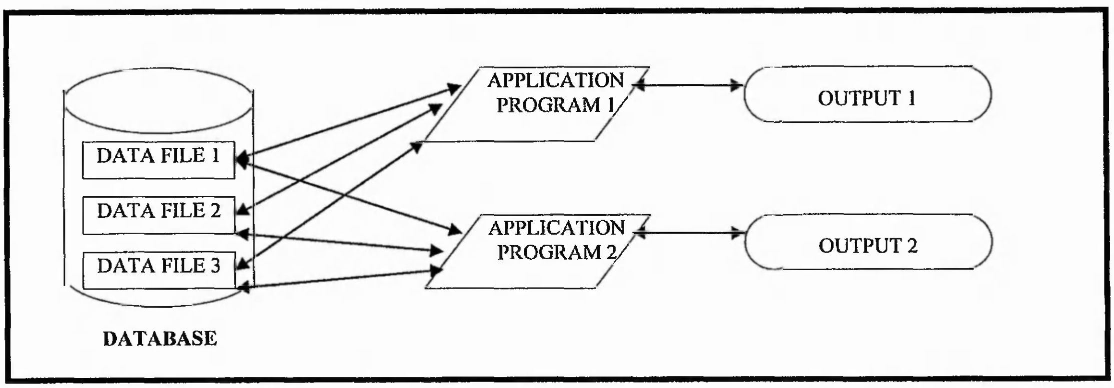
FIGURE 5.10: Part of the National Parks Database in Relational Form as Relational Tables and with Relational Joins.

This powerful query facility is responsible for a greater load on the processor, and increasing numbers of users on a system, making complex demands, will slow processing considerably.

Some GIS packages come with their own database. For example Info database is supplied as part of Arc/Info GIS. Others consist mainly of the SDSS (Section 5.4) component (for example, IDRISI). However, they can generally utilise better known proprietary databases such as Ingres, Oracle and Access, depending upon the operating system used.

5.3.2 Data Base Management System

A Data Base Management System (DBMS) helps to control how the database itself is accessed, and has a series of tasks that the program can use; for example addition, deletion and editing (for updating the dataset). It may allow access of certain 'core' data by particular users at specified times. To illustrate how this may be useful, consider Figure 5.11. This diagram indicates the data flows that may occur between a database and the GIS when a number of users are able to access the data. Should one user modify a copy of datafile 1 using Application 1 and, simultaneously, a second user modify the same datafile, which modification should be saved back to the database as the updated copy?

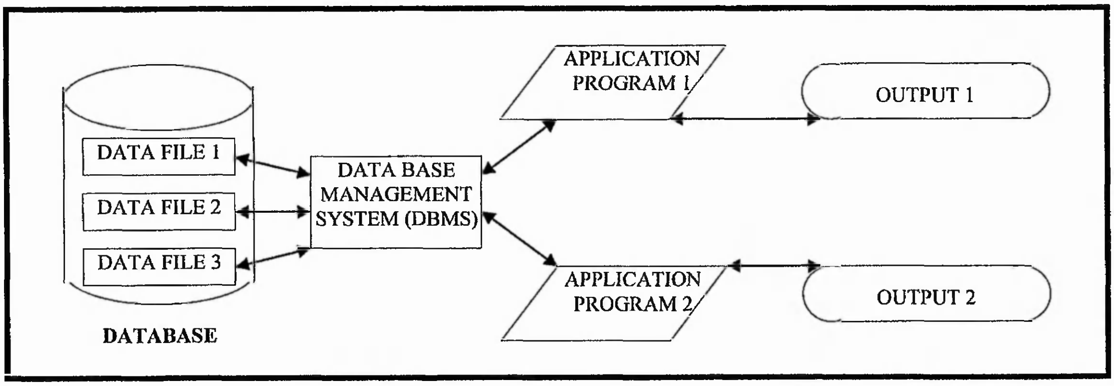


(Aronoff, 1989)

FIGURE 5.11: Sharing data files Among Applications in the File Processing Environment.

This situation is a particular problem for multi-user environments which may be spread over a local area network (LAN) or wide area network (WAN). In the case of Khövsgöl, it may be assumed that at some point in the future the Khövsgöl Park management may wish to exchange data with the Ministry of Nature and Environment (who control all the Mongolian National Parks) or access some dataset that they have. Currently this transfer would take place by hand, involving the transport of a disk or other storage device between MNE and Khövsgöl. In this instance, some protocol should be developed to ensure that different copies of the database remain consistent. A working procedure should be imposed so that proper backups are taken at regular intervals in order to provide a contingency plan against loss of integrity in the database. Further, only authorised users should have permission to modify the database at any time and applications to modify specific data in the database should be lodged with the manager who has responsibility for that data.

Should Khövsgöl ever get a permanent data link with the MNE, another solution to this problem could the introduction of a DBMS which would monitor the access of certain types of 'core' data, and control the updating and editing of datasets to ensure that multiple copies and editing of data did not occur (Figure 5.12). Thus, people editing data in Khövsgöl would not overwrite data updated at the same time in Ulaanbaatar.



(Aronoff, 1989)

FIGURE 5.12: Sharing data files Among Applications in a Data base Management System Environment

Aronoff (1989) suggests four ways in which a DBMS can be conceived within the context of a GIS. Firstly, the views of the data are independent of the way that the data are stored. Therefore, instead of storing different maps, the data which describe the geographical features are stored, and a new map is generated for specific analysis each time. Secondly, as changes occur within an organisation, the single transaction that registers that change can be used to update all the related datasets. All users thus have access to the most up-to-date information. Thirdly, the relationships among the spatial and attribute information are explicitly defined. Keys are used to classify attribute information and topology relates the spatial data. Finally, the DBMS fulfils a valuable function to control the integrity of the database though security and consistency checking to prevent misuse or degradation of the information as it is managed.

5.4: Spatial Decision Support System

The spatial decision support system allows the user to perform functions and operations on the data stored. Figure 5.13 categorises these into two and three-dimensional analyses (these are investigated further in Appendix K).

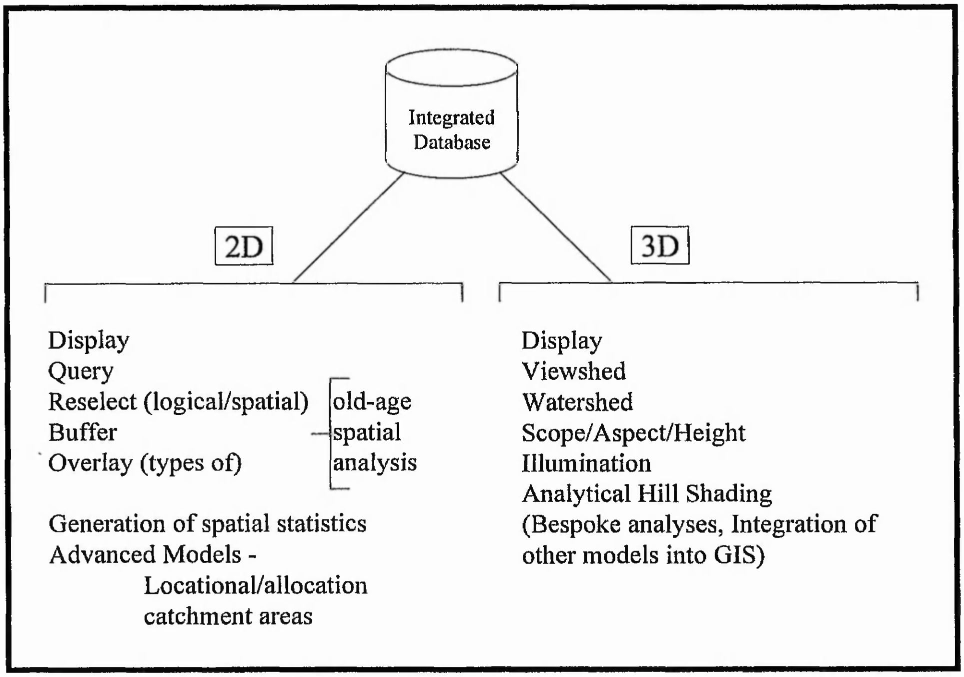


FIGURE 5.13: Functions and Operations on Data

Two-dimensional operations are generally functions of map display and manipulation and the calculation of lengths and areas (e.g. the distance between Janghai and Toilgot tourist camps). Three-dimensional operations deal with digital elevation models, and viewshed modelling (e.g. to determine from what areas of the Park a proposed new development would be visible).

5.4.1 Two Dimensional Operations

Retrieval, classification and **measurement** operations display data and allow the user to modify it by a process of simplification (classification) or measurement of specific features. Spatial queries may include questions such as "What is at this location?" (Vector) or "What are the contents of this cell?" (Raster). In the same manner, attribute queries can follow the lines of "What locations have this attribute?" and "Which cells have this attribute?" **Overlay** operations combine datasets from different sources to see how condition 'a' is affected by condition 'b'. It is a quick way of determining where different conditions occur at the same time and place within a region. For example, maps showing vegetation type and location of households could be overlaid and queried to show the number of households in the Park found on one particular type of vegetation. **Neighbourhood operations** allow the GIS managers to query where certain conditions occur in the region. A good example of this would be 'buffering', where elements are created that are a certain distance away from the original feature. This is often used when trying to model how one feature might be affected by another. Tourist camps could be buffered to a distance of 1km and the GIS could be used to determine the number of households found within that radius. This would allow managers to quickly identify who would be immediately affected by a development and, also, whether other households might be affected when they move into the region at other times of the year. This kind of information would be easily available for managers to access at the MNE, querying developments before they become established and allowing greater and more precise communications to occur between MNE and local Park managers. Two dimensional operations are discussed further in Appendix K.

5.4.2 Three Dimensional Operations

Digital Elevation Models[3] are data files which comprise (x,y,z) co-ordinates, where z is usually the definition of altitude, but may also be some other variable across the dataset surface. The use of DEMs (Weibel & Heller, 1991) fulfils the need for spatial analysis in three dimensions. This need is generated by many civil and military engineering projects, requiring three-dimensional display of landforms, analysis of visibility, route planning and location of features.

As discussed in Appendix K, terrain features can be represented by interpolation of a sample. Thus, spot height information can be used to generate an entire dataset. Volumes can be estimated by the integration of the area under the surface and line-of-sight or visibility maps can be created, which are useful in determining the visual impact of location of a feature on the landscape.

5.5: Output

It is also very important that data output can take place to a variety of media, and in a selection of formats for further processing by other programs. The production of maps is also dependent upon the generation of keys and labelling which will convey meaning.

5.5.1 Storage Media

Most commercial GIS packages allow the export of data to **softcopy** formats; disk, tape backup, or writeable CD. These media allow the dissemination of data between one computer and another. The Internet could also offer a method of data exchange between centres, regions or the world, but is restricted by the relatively small bandwidth available for the transfer of large data files. Additionally, some Mongolian service providers charge for the amount of data transferred, rather than the time taken for exchange - thus this method may not be so attractive for the movement of information between Mongolia and other countries (although this situation is now reforming inline with the more general policy of charging by time). A smaller internal network may, in the future, allow data exchange between regions of the country for a smaller cost.

Hardcopy (paper images) can be generated relatively easily, but with widely varying quality depending upon the type of printer available. It must be recognised that a very high quality colour printer can show no more detail on a map of poor resolution, and that very high quality data will lose much definition when produced by poor quality hardware.

Data can also be output to a screen image. This is difficult to transport, but is cheaper than production of hardcopy or softcopy. It relies on the quality of the monitor to represent the colours used in classification, and the resolution of the

[3] Also known as Digital Terrain Models (DTMs). In this context the name DEM is used interchangeably with DTM.

data presented. Resolution no better than the size of each pixel on the monitor can be achieved.

5.5.2 Output Formatting

Annotation and labelling should not impede the presentation of the information; rather, it should act as an aid to comprehension and understanding. The nature of much computer-generated output is such that it appears to be a precise and accurate representation of the real world when, in fact, this may not be the case. It is important to regard all output critically, to determine how reliable it is. This can be achieved with proper documentation of information (Section 5.2.7).

5.6: Implications for Management

5.6.1 GIS Costs and Benefits

The costs of GIS are heavily biased towards the initial collation and conversion, or purchase of data into the required format for GIS. Clark (1992) estimates the ratio of budget distribution to be about 50 percent for this acquisition of data, 30 percent for the software and applications development, and only 20 percent of the total budget for hardware. Other estimates put this figure between 10 - 1000 times the cost of the hardware (Clark, 1992). This is because the applications to which GIS can be put, are extremely diverse. A GIS that fulfils a function of support system in a developed country and which requires accurate data at a certain degree of precision will obviously incur much greater data collection costs than would for example a GIS in a developing country, which is required to be able to generate more general ideas about a region.

In addition to this, there are the costs in time and labour redesigning work procedures and hierarchical management structure. This includes education and training, and the use of specialist personnel, particularly at the beginning of the project.

Since the cost of hardware is lowered constantly (with an associated increase in capacity of memory and processing power), it is difficult to provide an estimate of the total costs involved in setting up such a system. However, taking the assumption that the Khövsgöl National Park would run their own GIS but share service resources such as digitising with the MNE, they might require a system containing the components illustrated in Table 5.2

A number of these costs could easily be offset by grants from the UN Biodiversity Project and UN Development Project. Training may be internal, as MNE already has a number of experienced GIS operators. The UN Biodiversity Project and Peace Corps are already working closely with Khövsgöl Park Administration to provide GIS training in the field and each Park Ranger has had training documentation for data capture techniques, including the use of GPS since at least 1995.

Component		Estimated Cost ($US)
Base System	PII 300, 120MB SDRAM, 36x CDROM 2x6GIG HDs. Keyboard, mouse, monitor with Windows 95	1500
Peripherals	CD Writer	225
	50 Writeable CDs	75
	Epson Stylus 800 printer	300
	Additional set cartridges	60
	UPS	525
	GPS	500
Software	GIS - ARC/VIEW	1195
Associated	Training	1500
	Data Collection	3000
TOTAL		**8880**

TABLE 5.2: Estimated cost of setting up a base GIS system in Khövsgöl

The estimate of US$8880 must be considered a high initial cost in order to get the project running, on a base that can be easily added to or upgraded later. This may seem expensive in Mongolian terms, when current management practices have been used for many years, however, when considered against the cost in environmental terms of having to restore an area after it has been damaged, surely a GIS is very cheap. If the system is able to alert managers more quickly of possible unacceptable impacts (Bojorquez-Tapia *et al.*, 1995), or re-site a proposed development to a more suitable location, then it would pay for itself very quickly.

Although the initial start-up costs of a GIS system seem to be large in comparison with established manual methods (Figure 5.14), over a longer term, it carries a number of benefits that traditional systems do not.

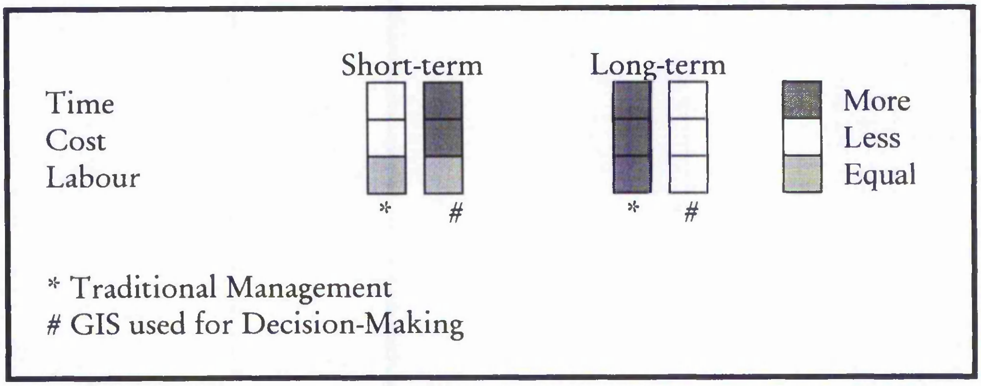


FIGURE 5.14: Comparisons with Other Forms of Management

An operating GIS encourages increased productivity, as each module of the GIS can work independently of each other. The onset of analysis does not have to be postponed until all data are input, as there can be a continual output of information to aid decision-making. The quality of decision making is also increased, due to the analysis of a wide range of data from a continually updated, consistent data set.

The DBMS is able to manage the system so that information redundancy (where data are collected but not used) and duplication (many sets of essentially the same data) are reduced. These management tools contribute to a high analytical turnover, processing highly complex queries of the database, for example an evaluation of multiple scenarios, such as the development of tourist camps in different places within a National Park.

Other intangible benefits include departmental sharing or co-operation where resources and information are needed by several groups or projects.

> "Information dissemination broadens the decision-making power base, as shared information leads to shared decisions." (Clark, 1992:31).

There is also a cost-benefit analysis decision implicit in the purchase of the GIS software itself. It must be decided to what degree the user takes control of the construction of the system. This may be the construction of the whole solution, where the hardware and software are created for the explicit purpose of solving some particular problem, or at the other extreme, where a company with specialism in GIS is sub-contracted to undertake all GIS analysis.

Table 5.3 illustrates some of the considerations that must be taken into account when deciding what form implementation should take. The end product will depend upon the ratio of **time:money:people** (Vaughan, 1993) available for the project. A project with little capital must increase the amount of time and labour available for implementation and, similarly, projects with less labour, or less time, must increase the corresponding elements of the ratio to achieve the project aim.

CONSIDERATIONS	IMPLEMENTATIONS				
	User Creates System	Buy Some Software	Buy Complete Software Package	Buy Complete Software and Hardware Package	Purchase GIS Services
Dependence on supplier	Very Low	Low	High	Very High	Nearly Complete
Time until system functions	Long	Long to Moderate	Short	Very Short	Not a problem
Initial cost	Low	Moderate	Moderate	High	High
Labour costs paid by user	High	Lower	Moderate	Moderate	Very Low
Risk and uncertainty	High	Lower	Low	Low	Low
Customising	Complete	Complete	Moderate	Moderate	Varies
Technical skill required of user	Extremely High	High	Moderate	Moderate	Quite Low
Use of existing resources	High	High	Moderate	Low	Very Low

(Aronoff, 1989)

TABLE 5.3: Alternative Approaches to Implementing a GIS

Turnkey systems (those which are commercial solutions which require little or no setting up) address a wide market, but may not suited to a specific problem; whereas customisable systems require greater technical ability but have a greater element of flexibility for problem solving.

There is a need to decide what type of system is required, using the current hardware and software as a basis, and preparing costings for translation of this to the new system. This may have to take into account the representation of data. Vector data which are to be translated to raster is a conceptually logical procedure (Section 5.3.2), but raster to vector conversion is likely to incur greater translation costs and require additional hardware and software.

5.6.2 Project Management

The greater start-up costs of a GIS system, as compared with traditional management, lead to complex implementation procedures. This is accentuated by the role of GIS within an organisation (Dangermond, 1989 and Lauer, *et al.*, 1981), as it may span several departments, disturbing the hierarchical structure of management. One method of implementation that is commonly adopted is the **pilot approach**. This is a provisional solution to the problem, in that it demonstrates the use of GIS over a small area or dataset in order to evaluate the use of GIS for the organisation as a whole (Figure 5.15).

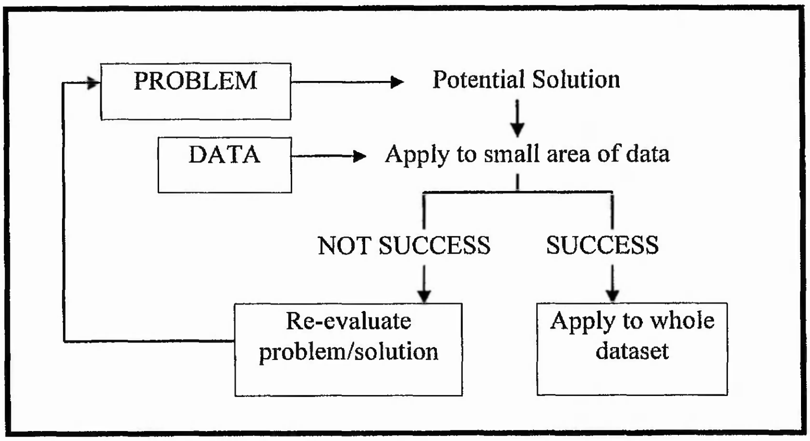


FIGURE 5.15: Pilot Approach to Implementation

The advantage of this approach is the freedom to explore the potential of GIS within a clearly defined dataset. However, if there is no definition of the end product required, this can lead to an unsuitable solution. Additionally, data are wasted if the product fails which can be costly. Since the trial is not on the whole dataset, it may not match real needs.

A more formal approach is the **structured methodology** (Figure 5.16). This has clear direction and a tight control on budget and timescale within the organisation, but procedures are time-consuming and may promote project inertia.

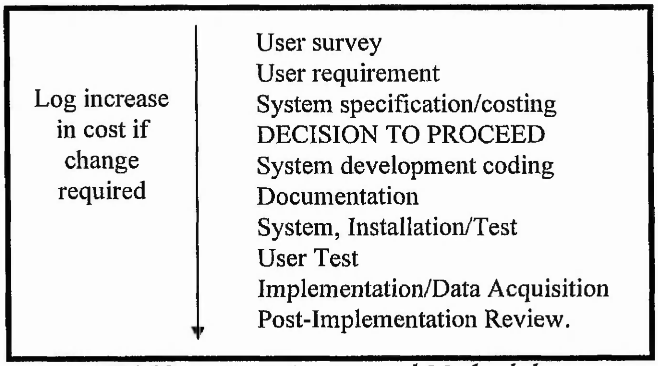


FIGURE 5.16: Structured Methodology

There is also very little to show until the later stages, and so it is difficult to maintain commitment to the project. Many projects are a combination of a pilot and structured approach, and this research will demonstrate elements of a pilot study, and make some recommendations for a later structured methodology for implementation in the Khövsgöl region.

5.6.3 Organisational Implications

As already mentioned, the use of GIS within an organisation can cross several departments, making use of data from many areas. GIS may thus be viewed as a department in its own right, utilising a common data pool which exists between each department, or as a central resource, where each department is able to utilise it. This in turn leads to ideas of data sharing between departments, rather than data ownership. This dissemination of information within the organisation broadens the decision-making base, as more people are able to contribute expertise to problem solving.

This disturbs the management and promotion hierarchy, and there will be a requirement for retraining of those people with redundant skills. The cost of data will also become important in its own right, not only to people within the organisation, but also as a commodity to be sold outside.

As implementation promotes significant changes in the structure of management, it is important to have a clearly defined plan. A key element of this is the 'Champion'. This person may be fairly computer-literate, takes responsibility for evaluating the GIS solution and how it would affect working practices and builds communications between the GIS team, users and management. A seniority hierarchy must be identified for data ownership, to allow the movement of data across departments into the GIS. At the early stages of the project in particular, it may be valuable to buy in system development services from outside the organisation, to maximise success in early projects.

Such Champions already exist within the MNE. Bhum-Yalagch (Officer of National Service for Protected Areas and Ecotourism) has a keen interest in GIS as a tool for management of Protected Areas in Mongolia and has expressed a desire to see this role widened in terms of provision for tourism development. He is computer literate and already works in a liaison role between various NGO's, the MNE and UNDP/UN Biodiversity projects. Data ownership is already a feature of existing management techniques and this should be extended so that there are communication pathways between organisations where there is a distributed data environment. Bhum-Yalagch would be in an ideal situation to build these links, given the appropriate authority. He also works well at a local level, undertaking frequent visits to Khövsgöl to view how policies are being executed on the ground. Without a suitable individual in this position, the promotion and implementation of a GIS to work at different levels in the management hierarchy would be far more difficult.

Cassetari (1993) identified that the key to successful management was integration. GIS is a system designed to integrate different datasets, and better-informed managers make better decisions.

The most important issue is identification of a problem. If there is no problem then the expense of setting up a project may be abandoned. Khövsgöl National Park management recognise the importance of tourism to the region, and are concerned that it is developed in an environmentally sensitive manner, and thus the implementation of a GIS is one methodology which might be utilised to address the decision-making process.

5.7: The Role of GIS in Tourism Management

From Figure 1.17 is can be seen that any GIS for Khövsgöl will have to integrate diverse sets of data. Although this data may range from topological data to the opinions of local people, they are all linked by a common factor; they must be spatially referenced. This means that each item of data must have a link to a particular area of the database (Khövsgöl) which shows **where** it occurs. A second link (attribute) states **what** the data is. This datum can be displayed as either a point, line or area (Section 5.3.1).

Many GIS applications that provide decision-support for tourism-related situations take into account data that is 'measurable' – for example the amount of precipitation at a given point, the number of tourists staying at a particular site, or models of visitor flows. However, in Khövsgöl, local people are a very strong element of the geoecology of the region and any GIS proposed that did not take into account their feelings and opinions, would be inappropriate (Michener, 1992). Worse, it would give an impression of authority due to the nature of the output (Section 5.5.2) and could encourage decisions to be made on the basis of incomplete data; decisions which are unqualified and no better than those currently in place.

It is very important not to place a strong emphasis upon the GIS as a decision-maker. Rather, it is a decision-support tool which should be regarded as an aid to decision-making in conjunction with other methods and within a properly constructed planning methodology (Brown *et al.*, 1994). Moreover, the GIS cannot be relied upon to accurately model movements of local people, beyond a broad overview. It is not the aim of the researcher to suggest that a GIS may help to resolve all conflicts and bring about satisfactory resolution of the region's problems (Harris *et al.*, 1995). However, it does have a clear role in ensuring that local people can be integrated into the planning process at all stages and that the use of data within the GIS database is more clearly documented. This may go some way towards reducing decision-making that occurs on the basis of monetary transactions alone. With local people involved in the management process, greater levels of participation (Figure 4.8) are possible.

Although GIS has been used successfully for over ten years in the fields of environmental management (Brokeš *et al*, 1992 and Parker & Cocklin, 1993), engineering and facilities management, its use has been limited in tourism. Tourism consultancies seem reluctant to use this technology as an additional 'tool' in their 'basket'. Part of this reluctance may be a result of the background of tourism consultants. A background in business or strict environmental management would not necessarily have touched on GIS applications emerging from the geography and CAD fields. Additionally, the initial expenditure upon GIS in terms of the technology itself and retraining of personnel is high compared with traditional methods (Figure 5.14). This creates an inertia whereby this sector of the tourism industry is slow to adapt.

Other sectors such as environmental management which touch tourism as part of cross-disciplinary work, seem to rely much more upon GIS. The coral reefs off the coast of Belize have been managed with the use of GIS in order to segregate 'sensitive' regions and direct snorkelers to ones more able to resist disturbance. In this case, the GIS consists of satellite imagery used as a backdrop to a vector- based survey of the site in order to construct maps of areas where particular recreational activities may take place.

However, this example is limited in that visitor movements across the site are easy to monitor and control if necessary. In many tourist sites, visitors are subject to very little control within the site itself and so it is more important to be able to model their movements. Through network analysis (Section 5.4.1), the most appropriate route along a road network from one point to another can be determined, together with different permutations of routes that visitors might take. This would be useful when planning a track network, or for siting tourist facilities along the network to make sure that they are easily accessible by the greatest numbers of people.

New routes can be planned in order to avoid any locally sensitive sites, while still taking in sites of interest. The availability of a GIS does not restrict some types of planning to analysis by it, indeed a GIS is just a tool. In some cases it may not be appropriate to use, as local rangers may be able to determine new development features such as tracks. However, it is important to be able to locate these features within the GIS database, as it represents new data which may affect analyses in the future.

Through the use of a GIS, multiple datasets can be examined, which is its true value for management (Section 5.1.1). In the case of Khövsgöl, this means that all data required for managing tourism within the National Park may be considered. Vegetation and wildlife distribution records can be incorporated and monitoring programmes set in place. Any changes can be easily correlated with changes in visitor distribution or climatic changes. Visual patterns may be more easily recognised than statistical data that has no spatial element.

5.8: Conclusion

GIS can be used to integrate many different types of data. The aims of this research are to show how GIS can be used to integrate both environmental and community data. That is, data layers such as vegetation, wildlife, location of mineral resources, topography (DEMs), and the community data: opinions of the National Park, attitudes to proposed tourism developments, and regions of importance to local people. The research will also determine, in the light of the previous discussion, which components of the GIS are particularly applicable to the climatic and managerial environment of Khövsgöl and how issues of data quality and accuracy will affect the potential of GIS for tourism management decision making.

Chapter 6 will show how each type of data which might be utilised within a GIS for tourism management in a Protected Area (Figure 1.17) was collected and spatially referenced. It will also discuss how hardware relevant to the implementation of GIS in Khövsgöl was trialled in order to test its functionality and viability for use in that environment.

Chapter Six
METHODOLOGY

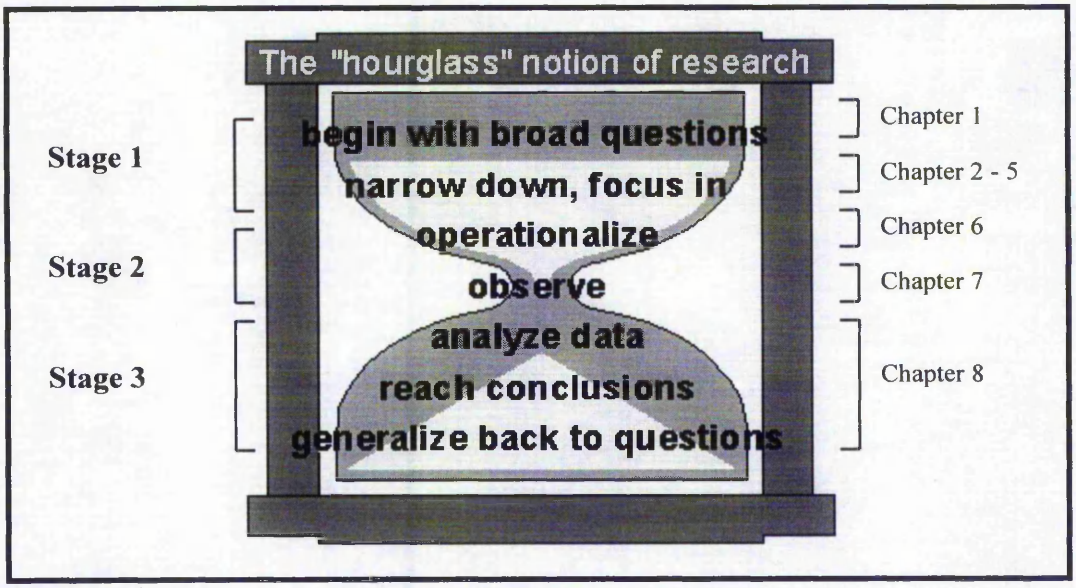
Chapter Six

METHODOLOGY

In order to determine how a GIS could be used to help managers make decisions about planning strategies for the Khövsgöl National Park, a number of factors need to be examined in greater detail. Firstly, the environmental and cultural landscape must be studied in order to determine the extent and context of available information for a GIS and how it might be collected and integrated. Secondly, information must be more specifically collected about social and cultural issues, in order to determine how this sort of data would be integrated into a GIS database. Finally, the GIS must be defined in terms of its role within the current organisational hierarchy.

6.1 Research Design

The methodology for this research has been broken down into three distinct stages, loosely following the "hourglass notion of research" (Trochim, 1996) (Figure 6.1). The first stage was used to review the secondary data available and formulate some broad questions. These questions were then narrowed down and focused upon during the second stage of research, whereupon data collection and observation occurred. The third and final stage dealt with the analysis and interpretation of the collected data to reach conclusions and make some generalisations about the broad subject of research as a whole.



(Trochim, 1996)

FIGURE 6.1: The 'Hourglass' Notion of Research

6.1.1 First Stage

A review of the literature was undertaken in order to familiarise the researcher with concepts of tourism and the potentials of GIS for visitor management. In this stage, the research area was defined and plans made for fieldwork logistics. The literature review was focused upon the areas of sustainable tourism development, Mongolian history and culture and the application of GIS to visitor management in a developing country. This review has taken place through library and journal searches, and also online (Internet) searches, to gain the most up-to-date information.

Additionally, a week's work was undertaken for the MacArthur project at Cambridge University, which is a unit set up to research environmental and cultural conservation in Inner Asia. Using 'IDRISI' GIS, the researcher helped to organise the GIS database, and produce imagery for the final reports. This experience gave an idea of the scale and quality of data available for Mongolia, and also access to a large source of background literature and questionnaires used in Mongolia by MacArthur project researchers. Background research was also undertaken at the University of Leeds, where there is a substantial amount of archived early material about Mongolia, and also more current works belonging to the Mongolian Society.

6.1.2: Second Stage

Two phases of fieldwork in Khövsgöl took place, the first phase during June to August in 1995, and the second in the same period during 1996. This stage was concerned with the collection and collation of primary data using a variety of techniques. These included questionnaires, interviews and the collation of map and scientific data.

6.1.3: Third Stage

This stage included the collation of data required for a GIS into a digital format. A 1:100,000 scale Russian map of the region was digitised and can be found on the disk enclosed with this thesis. Cultural and community data were analysed and linked with the GPS data recorded for each household. Finally, the GIS itself was evaluated in terms of its suitability for the purpose of a decision-support system to aid sustainable tourism development.

6.2: Methodological Context

A positivist approach was taken, with the intention of generating data for the GIS, which requires input to be in a statistical, numerical or classified format. However, a number of semi-structured interviews were undertaken initially, in the first phase of research, to give the researcher the background knowledge required in order to ask the right questions and take an emic perspective. This qualitative approach was taken in order to supplement and check the data generated by the quantitative approach and assist in drawing more balanced conclusions from the data.

This research is intended to show how a GIS could be used to help solve a real world problem. The effect of this intent, however, is to limit the philosophical standpoints available, to those that generate data which the GIS can accept. This case uses GIS as a tool to explore possible methods of sustainable visitor management and methods of data collection are, therefore, limited to those which elicit quantifiable or classifiable results. However, the pilot study to this research gives a more qualitative approach and therefore helps to negate some of the limits and restrictions of a quantitative epistemology. The pilot study was employed as a means of collecting information, experiencing life and understanding some of the issues and concerns that are felt by local people. In this way, it can serve as a tool against which more formal quantitative methods can be compared, in order to assess the validity and reliability of data obtained. It would also be difficult to make any sort of interpretation of the later community survey data, without any context in which to place the responses. Qualitative data yielded by the pilot study methodology (Section 6.6.1) gave this context, so as to allow the researcher to analyse survey responses in a Mongolian context rather than base them against preconceived Western views.

The pilot study methodology yields qualitative data that cannot directly be input to a GIS, although the information in some form could be linked as attribute data to tables in the database (Figure 6.2). Users of the suggested management plan (Section 8.2.6) would not necessarily employ the same methodology to conduct a survey, although it may be of use to NGO's and other foreign data collectors. Local officials would be expected to carry out their own data collection exercises to add more up-to-date information to the GIS database.

Data to be input to a computerised system must be collected in a positivist manner, in that anything that is observable or measurable can produce viable data. 'Truth' is obtained by the senses, rather than intuition (Alford, 1997 and Chalmers, 1982). The community survey (Section 6.4.2) collated data in this manner.

This positivist methodology is information that a GIS can accept. Conditions are statistically defined (for example, an area is used for herding, or it is not) and then these conditions are analysed by the use of algorithms within the GIS. These algorithmic operations are mathematical and involve the transformation of one or more values into a set of new values across the dataset. Within this, information that cannot be quantified is thus of no value, as the GIS has no method of manipulating or analysing it. However, the GIS does make some provision for storing qualitative data, in that any feature or condition which can be described may be stored as text or a diagram and linked to the quantitative data. In this manner, although the qualitative data may play no direct role in the algorithmic manipulation of the dataset as a whole, it may be present and instrumental in prompting the analyst to consider data manipulation in one way or another.

For example, all things being equal and the data collected in an ideal and constant environment, the question "Do you or your family hunt?" may elicit positive responses from some families and negative ones from others. It may be suspected (but not proven), that some community groups were unwilling to indicate evidence of hunting in a National Park, and thus denied it. All things being equal and true, the enumerator would not be able to give any evidence for this, only an intangible or **qualitative** "suspicion" gleaned from indirect observation of the behaviour of the interviewees.

All data in the GIS are held in tables (Section 5.3.4). This means that question responses could be held within the GIS as follows:

Key	Q46	Spring	Summer	Autumn	Winter
33	Yes	0	0	Marmot	0
34	No	0	0	0	0

Key	Reference	Latitude	Longitude
33	89A102	50°.37.89N	100°.11.63E

FIGURE 6.2: Survey Data held in a Proposed GIS Database

Each record has a unique identification key (in this case 33) which ties it to a particular household. Another table matches these keys to data such as household reference (Appendix G) and GPS reading (latitude and longitude). How this data is displayed and manipulated is under the control of the GIS operator. Even though it can be fairly logically assumed that more people will hunt than those actually stating so, the data is still useful in simple analysis and would exist as a baseline upon which more accurate data input could be built. For example, should the National Park rangers become aware of a deficit of marmot in certain areas of the Park, they might interrogate the GIS database to look for patterns of hunting by local people in the surrounding areas. A GIS would be able to generate a 'map' of hunting responses throughout the Park, or particular region, or display the information statistically, depending upon the requirements of the operator. Clearly, for this example, the local Park Rangers would be very aware of these types of hunting activities within the local community and would not require a GIS to tell them that. However, in more complex analyses, such as the construction of patterns of animal loss or redistribution over a number of years, a GIS would be helpful in analysis.

Nor would the GIS rely solely upon the responses to the survey carried out in 1996. It is clear that Park Rangers and local officials would contribute additional and continually updated information to any database. It is not relevant to try to compare the use of GIS against a survey conducted without one in a single instance. The benefits of a GIS are apparent when analysing different datasets. Local Park rangers may well be aware of environmental issues, but this is far removed from having documentary evidence for their opinions. Alone, these are only anecdotal reports which are also limited by the period of time that the ranger serves. Their 'database' remains in their head and is then lost to the Park Management, should they leave the area. Long term temporal analysis is also difficult to conduct without reference to documented data that can be analysed. A GIS would have the ability to bring together different datasets on vegetation, wildlife distribution and herding practices and relate these to information about local people – a facet of the ecology of Khövsgöl that has remained disunited throughout much of the more recent planning processes.

It was not the intention of the researcher to employ a case-study methodology (Hamel *et al.*, 1993) as the preliminary (exploratory) stage of the research, and then to go on to the next hierarchical level of surveys of experimentation. As Yin (1989) contends, each strategy is pluralistic, and may be used for all three purposes, exploratory, descriptive or explanatory. The intention of the researcher is to show that, in this instance, a particular subset of case-study methodology termed Rapid Rural Appraisal was required in an exploratory sense and that subsequently a survey was needed in order to gain the 'where' (geographically referenced) data, a fundamental component of the GIS database. Table 6.1 illustrates the relevant situations for different research strategies, depending upon the form of the research question, the required control over behavioural events, and whether the question was focused upon contemporary events.

Strategy	Form of Research Question	Requires Control Over Behavioural Events?	Focuses on Contemporar y Events?
Experiment	how, why	yes	yes
Survey	who, what, where, how many, how much	no	Yes
Archival Analysis (e.g. economic study)	who, what, where, how many, how much	no	yes/no
History	how, why	no	no
Case Study	how, why	no	yes

(Yin, 1989)

TABLE 6.1: Relevant Situations for Different Research Strategies

A survey would not have been suitable for an exploratory phase in this instance, as the culture and lifestyle of the community was little understood, and so inappropriate questions eliciting inappropriate responses would have been directed at the community with no mechanisms for establishing validity.

By using a number of different methodologies, a mechanism of 'triangulation' was put in place which provided a crosscheck for measurable results. In effect, in order to gain meaningful information about "where", it is also important to have an understanding of the key processes which underlie the choice of "where" and therefore we also need to know "how" and "why". This also helps to determine the extent of data reliability[1], and validity[2], where a phenomenological approach is arguably conducted from the standpoint of achieving validity, whereas a positivist approach is conducted towards the achievement of reliability.

[1] Demonstrating that the operations of a study, such as the data collection procedures, can be repeated, with the same results (Yin, 1989)

[2] In this case referring to "external validity". This is a measure of the domain to which a study's findings can be generalised (Yin, 1989.)

In this case, reliability for qualitative data is not considered to be of great significance, as people's opinions and feelings are ever changing and depend upon complex external factors. Geographical elements, however, are more 'reliable', most things being constant, although some may also be expected to undergo change, albeit on a different timescale.

Table 6.2 illustrates the tests for reliability and validity in research, and outlines a number of tactics that may be employed in order to determine to what extent reliability and validity is reached.

Tests	Case Study Tactic	Phase of Research in Which Tactic Occurs
Construct Validity	Use multiple sources of evidence Establish chain of evidence Have key informants review draft case study report	Data collection Data collection Composition
Internal Validity	Do pattern matching Do explanation building Do time-series analysis	Data analysis Data analysis Data analysis
External Validity	Use replication logic in multiple case studies	Research design
Reliability	Use case study protocol Develop case study database	Data collection Data collection

(Yin, 1989)

TABLE 6.2: Case Study Tactics for Four Design Tests

The first stage, using Rapid Rural Appraisal (Section 6.3.2) methodologies (Kapila & Lyon, 1994), was intended to understand the needs and views of local people, to understand what is important to them in order to be able to conduct a more formal community survey later. This methodology also gave some measure of validity. If a survey alone had been undertaken, there would not have been any knowledge of to what degree the responses could be relied upon. Moreover, constructive metadata (Section 5.2.7) could not have been recorded about the accuracy of the data, without having some background of understanding gained by the use of a different methodology. If significantly different points of view were expressed in the data gained from each methodology, this would have caused the research to be refined. Since similar responses were received using each methodology, cross-checked against different members of the community, then it was held that the data gained was reliable.

RRA methodologies were important in aiding the researcher to collect community and social information. It does not follow that this is presented as an inflexible set of rules by which all future data should be derived. RRA allowed the researcher to approach data collection from two opposing 'paradigms', generating qualitative (RRA) data and quantitative (survey) data. In this way, it is presented to demonstrate that community data collected during the more formal survey could be placed in an appropriate context, rather than existing as a set of responses to a questionnaire developed and analysed within a Western cultural framework. Local people and officials continuing to gather this kind of information would not require the RRA methodology as they would already understand the context by which to interpret responses. Information derived from RRA techniques is not intended to be **directly** integrated into the GIS at face value, but rather, forms the context by which appropriate information for a GIS can be decided upon, datasets held within the GIS can be analysed and an objective view taken of the reliability and validity of that data.

6.3: Data Acquisition

6.3.1 Environmental

Table 1.17 (Chapter 1) defines the types of data required to form the basis of a GIS, and the sources from which they might be taken. **Environmental** data was gathered from maps provided by the National Park administration, field research undertaken by the Russian-Mongolian Expeditions to the region over the past twenty years, and recent data collected by Discovery Expeditions volunteers (Bennett & Harper, 1995). Additionally, satellite data was located after an Internet search (Section 7.4.1).

6.3.2 Culture and Community

Cultural and community data was to be collected from people living in the National Park, in order to provide a basis against which tourism management and development could be compared. This was achieved firstly by gathering a wide range of materials about Mongolia as a whole, and then focusing upon the Khövsgöl region; and secondly, by the first phase of fieldwork during 1995.

The objective of the first phase of fieldwork was an 'Exploratory Rapid Rural Appraisal' (McCracken *et al.* 1988). Rapid Rural Appraisal (RRA) was developed as a result of the "Green Revolution" in the 1960's (Theis & Grady, 1991), where a need was realised for rapid evaluation of communities and transfer of technology. The amount and detail of information required using an RRA in a limited timescale are kept to a minimum and is regarded as a state of 'optimal ignorance' (Figure 6.6). In addition, a key feature of RRA is the diversity of analysis, where many different sources or methods of gathering information are employed, and 'truth' is approached by the rapid build-up of information, rather than through statistical replication. (McCracken, *et al.*, 1988)

RRA methodologies were viewed in terms of how to behave respectfully in an interview and how to appropriately interpret themes and discussions that were drawn out. Use of RRA as the sole methodology for gaining information about a region upon which to base important planning decisions, would be very unwise. The researcher does **not** aim to presume that any deep understanding of a community can be achieved in as little as two months. However, in this instance, a number of RRA tools were utilised, where **appropriate**, to communicate with local people about their concerns and feelings. The success or failure of RRA depends, in the main, upon the researcher, whether he or she is able to take an emic perspective rather than falling back upon their own preconceived ideas. Their role and behaviour also influences RRA output as it determines the nature of any communications with local people. A researcher who becomes part of the community would gain a deeper understanding of people than one who was a stranger. Ultimately, the respect a researcher has for people, their beliefs and customs is what will supersede the barrier created by language, as they are judged by what they do, rather than what they say.

An RRA methodology features a set of **three** 'core' techniques. There is firstly a review of the secondary data available from government agencies, universities and tourism bodies, as well as project documents, research papers, survey results, maps, photographs and satellite images. This approach helps to build a basis upon which direct observation and semi-structured interviews (second and third techniques) can be placed.

Consequently, the objective of the second phase of fieldwork was to utilise the results from the RRA in the production of a questionnaire, and application of more formal methods of research. Table 6.3 compares the elements of Participatory Rural Appraisal (PRA) - which in this instance is considered comparable with RRA - methodology with that of survey research.

Element	**PRA**	**Survey Research**
Duration	Short	Long
Cost	Low to medium	Medium to high
Depth	Preliminary	Exhaustive
Scope	Wide	Limited
Integration	Multidisciplinary	Weak
Structure	Flexible, informal	Fixed, formal
Direction	Bottom-up	Top-down
Participation	High	Low
Methods	Basket of tools	Standardised
Major Research Tool	Semi -structured interview	Formal questionnaire
Sampling	Small sample size based on variation	Random sampling, representative
Statistical Analysis	Little or none	Major part
Individual Case	Important, weighed	Not important, not weighed
Formal Questionnaires	Avoided	Major part
Organisation	None-hierarchical	Hierarchical
Qualitative Descriptions	Very important	Not as important as '*hard data*'
Measurements	Qualitative or indicators used	Detailed, accurate
Analysis / Learning	In the field and on the spot	At office

(Theis & Grady, 1991)

TABLE 6.3: PRA versus Other Research Methods

In this way, a triangulation (Figure 6.5) of different methodologies helps to balance the disadvantages of one method over another and increases reliability and validity across the collected dataset. The basis for collection of community data is to provide some sort of baseline data for the GIS. As section 5.7 outlines, the GIS is not intended to model specific movements of families, but is a management tool that may be used to help integrate community data and make sure that this data is available to decision-makers, in a format which can be interrogated.

6.3.3 Tourism

Tourism data was gathered from key informants within tourism companies in the National Park and tourists themselves, during the first phase of fieldwork in 1995. A questionnaire was also produced for tourists to the region, and distributed during 1996.

Additionally, some hardware and software which would aid in data collection for a GIS (including a solar panel and laptop computer) were tested during the first and second phases for ease of use, portability and efficiency.

6.4: Logistics in the Field

6.4.1 First Phase, 1995

During the first phase of field work (Table 6.4), research took place in conjunction with Discovery Expeditions, an ecotourism company which undertakes responsible travel, incorporated with research, across the world. A number of scientific staff led paying volunteers in a number of research projects in the Khövsgöl region. The advantages of this arrangement were such that logistical problems would be solved by the Discovery Expeditions staff, allowing the scientific team time to concentrate on projects.

The expedition comprised two phases, each lasting approximately three weeks. A separate group of participants participated in each phase and had the opportunity to take part in research and gain a valuable insight into the culture and environmental nature of the region they were visiting, assisting in one or more projects for the benefit of local people and the environment.

Researchers arrived in the field two weeks prior to the arrival of the first phase of participants. At the end of the first phase, the team travelled to Mörön for the annual festival of Naadam, and the second phase of participants arrived shortly after this.

Researchers were aided both by the extra manpower or additional participants, and the wide range of skills gleaned from diverse professional backgrounds, but at the same time the group size also restricted entry to some of the locations for certain types of research, or lack of resources precluded particular activities from taking place. The logistical support that Discovery Expeditions provided was invaluable for the first phase of fieldwork in creating links between researchers, management and local people, but the requirements of the second phase of fieldwork would involve a large degree of movement, which would not be a favourable component of a short-term volunteer-based project.

6.4.2: Second Phase, 1996

The second phase of field research was planned on an independent basis; contact being made with Batjargal, the vice-rector of the Mongolian Economic College. Computer hardware, solar panels and recharging equipment (Carver *et al.*, 1993, 1994, 1995) were transported by air from the UK. The computing equipment, consisting mainly of a flexible solar panel, battery charger and GPS were loaned by the Nottingham Business School, while the penpad notebook and some associated software were loaned by outside companies (Section 6.8).

A teacher from the Mongolian Economic College was employed to assist with translation of the questionnaire in the field and help make other travel and logistical arrangements. While in Ulaanbaatar, contact was made with the Ministry of Nature and Environment to arrange Park fees and the research schedule in Khövsgöl.

Upon arrival in Hatgal (the local community centre), a guide, horseman and five horses were hired - upon the advice of the head ranger of the National Park - to transport the researcher and interpreter around the perimeter of the lake for the purposes of interviewing as large a sample of families as possible. A community survey was applied to each family which had a distinct pattern of movements and grazing, compared with their neighbours (Section 6.6.3). Time constraints forced interviews to be conducted in the most accessible areas of the Park. Families living more than five kilometres from the lakeshore were not considered, but these represent only a small percentage of the total population and are less likely to be directly affected by tourists on a regular basis.

One hundred and fifty copies of the community survey response sheets, and one hundred visitor questionnaires, were taken out to the target survey region. Visitor questionnaires were distributed to each tourism camp in the region by the head ranger, while the community survey was in progress. The expedition itinerary (Table 6.5) shows the number of days spent in the field, and the travel logistics.

TABLE 6.4: First Phase Itinerary (1995)

Date	Key	Activities
JUNE 12	#	London - Moscow
13	#	Arrive Ulaanbaatar - visit Natural History Museum
14	+	Visit Ministry of Nature and Environment
15	+	Rest of team arrive in Ulaanbaatar
16	#	Ulaanbaatar - Mörön - Hatgal
17	#	Overnight at a tourist camp
18	#	Construct Base Camp
19	#	Construct Base Camp
20	#	Horses arrive
21	#	Visit Hatgal to gain permit from Park director
22	*	Contacted local tourist camps
23	*	Contacted local tourist camps
24	*	Officer of UN Biodiversity arrives
25	*	Fieldwork - testing solar panel and batteries
26	*	Fieldwork
27	*	Fieldwork
28	*	Fieldwork
29	*	Fieldwork
30	*	Interview with Purevdorj
JULY 1	*	lack horses
2	*	lack horses
3	#	lack horses - basecamp - Hatgal
4	#	Hatgal - Mörön - Ulaanbaatar
5	+	UB Contact with UN Biodiversity
6	+	UB Contact with Ministry of Nature and Environment
7	+	UB Meeting at Ministry of Nature and Environment
8	#	Ulaanbaatar - Mörön - Hatgal - Base Camp
9	*	Meeting with agronomist
10	*	GPS *gers* between Basecamp and Hatgal
11	#	Hatgal - Mörön
12	*	Naadam at Mörön
13	*	Naadam at Mörön
14	#	Mörön - Hatgal - Base Camp
15	*	Fieldwork
16	*	Fieldwork
17	*	Fieldwork
18	*	Fieldwork
19	*	Fieldwork
20	*	Fieldwork
21	*	Fieldwork
22	*	Fieldwork
23	*	Fieldwork
24	*	Fieldwork
25	*	Fieldwork
26	*	Fieldwork
27	*	Fieldwork
28	*	Fieldwork
29	*	Fieldwork
30	*	Fieldwork
31	*	Fieldwork
AUGUST 1	*	Fieldwork
2	#	Base Camp - Hatgal - Mörön
3	#	Mörön - Ulaanbaatar
4	+	Presentation of research at Ministry of Nature and Environment
5	+	Collation of data
6	+	Meetings at Ministry of Nature and Environment
7	+	Preparation of report for Ministry of Nature and Environment
8	#	Ulaanbaatar - Moscow
9	#	Moscow - London

* Fieldwork
\# Travelling
\+ Ulaanbaatar

TABLE 6.5: Second Phase Itinerary (1996)

Date	Objectives
Mon JUNE 10	Fly Heathrow - Moscow
Tues 11	Moscow - UB
Wed 12	Hire of interpreter
Thur 13	Travel arrangements to Hatgal
Fri 14	Register with Police
Sat 15	Shopping for supplies
Sun 16	Packing
Mon 17	Permission from Ministry of Nature and Environment
Tues 18	Permission from Ministry of Nature and Environment
Wed 19	MIAT flight to Mörön, Drive to Hatgal
Thurs 20	Meet National Park officials
Fri 21	Check equipment, Hire guide and horses
Sat 22	Check horses, buy food
Sun 23	Leave for Alexar, east of lake
Mon 24	*
Tues 25	*
Wed 26	*
Thurs 27	*
Fri 28	*
Sat 29	BUFFER DAY
Sun 30	BUFFER DAY
Mon JULY 1	*
Tues 2	*
Wed 3	*
Thurs 4	*
Fri 5	*
Sat 6	BUFFER DAY
Sun 7	BUFFER DAY
Mon 8	*
Tues 9	*
Wed 10	*
Thurs 11	Reach Hankh. Replenish supplies. Meet governor.
Fri 12	Evaluate Hankh in terms of tourist development
Sat 13	BUFFER DAY Naadam
Sun 14	BUFFER DAY Naadam
Mon 15	Continue to west side of lake
Tues 16	*
Wed 17	*
Thurs 18	*
Fri 19	*
Sat 20	BUFFER DAY Visit to Discovery Expeditions basecamp - time permitting
Sun 21	BUFFER DAY Renchinlumbe trip - time permitting
Mon 22	*
Tues 23	*
Wed 24	*
Thurs 25	*
Fri 26	*
Sat 27	BUFFER DAY
Sun 28	BUFFER DAY
Mon 29	*
Tues 30	*
Wed 31	*
Thur AUGUST 1	*
Fri 2	Phone confirmation of flight from UB
Sat 3	*
Sun 4	6 day trip with Discovery participants
Mon 5	*
Tues 6	*
Wed 7	Hatgal, confirmation of flight details
Thur 8	*
Fri 9	*
Sat 10	Packing
Sun 11	Hatgal - Mörön
Mon 12	Mörön - UB
Tues 13	UB - Moscow
Wed 14	Moscow - Heathrow

* Estimated distance of 15 km / day. Buffer days used in case of bad weather. Also for resting horses, or catching up in bad conditions. Collection of spatial data took place, plotting nomadic movements on maps, and giving a questionnaire to each family.

6.5: Environmental Data

In order to construct the database for the GIS, a wide range of environmental data was required including, most importantly, a clear base-map of acceptable accuracy, which could be input to the GIS in a digital form. This map would have the basic scale and co-ordinate system to which all other data entered subsequently would be referenced.

Also needed, were maps of administrative boundaries and centres, showing the locations of each *sum* and the limits of the National Park itself as well as maps of the physical environment, types of vegetation, limits of wildlife habitat, and climatic variations, in order to establish the geoecology of Khövsgöl.

The construction of the base (and subsequent) maps took place by scanning the best paper map (in this case a 1:100,000 scale produced by the Russians) in sections, then edge-matching the sections using MapCAD software. The entire map was digitised on-screen, using a screen pointer to 'trace' relevant features. In this case, one layer of the map was composed of contours, another the lake outline, and a third, the position of waterways and waterbodies (subsequently, environmental maps were digitised in a similar manner).

6.6: Cultural and Community Data

6.6.1 Rapid Rural Appraisal

The focus of this research as a whole was to explore ways of combining the environmental data (Section 6.5) with community data obtained by a variety of methods, given the time constraints, and exploring the ways these could be integrated into a GIS. As discussed in Section 6.3, Rapid Rural Appraisal involves the understanding of a community through a build-up of information gained by the use of several tools from many different sources. Interviewees are not necessarily selected, but may be a chance meeting during a visit to the area. The tools of RRA can include semi-structured interviews (Section 6.6.2), analytical games and the production of diagrams, or workshops.

These tools may be used at the discretion of the researcher, singly or as a set, to gain the necessary information required from the community. McCracken (1988) describes three types of analytical games which may be used to gain information. The first is a type of ranking, where the participant is asked to rank a set of information, starting with the highest, then the next highest and so on. In Khövsgöl, this was used to find the lengths of pastoral movements of families[3], where a head was not sure of distance. The second type is a matrix, where comparisons are made between different variables, until all the possible combinations have been explored. In this way, information about who did which

[3] Local Government officials were also interviewed, but a period greater than that available in the field would be required in order to properly document all information available from them. This was not felt to be appropriate in the context of this research, as the researcher wanted to make sure that a good cross-section of the community was reached. Moreover, due to the lack of copying facilities in the region, any transferral of map data would require redrawing and duplication. This time would be more usefully spent by local officials in the transfer of this data into a GIS.

jobs in the *ger* was gathered, until all jobs had been accounted for. The final type is a ranking of a set of variables by a group of members of the community. Grandin (1987) discusses how this method was used to assess the spread of wealth in an area. A complete list of the households was obtained, and the names written on small cards. Knowledgeable members of the community were then asked to rank the households in order of wealth.

Although in RRA terminology these tools may be described as 'analytical games', at no point were they referred to as 'games' to any local people – in the same way as local families were not approached to take part in a 'semi-structured interview'.

Other tools include diagrams and profiles which can help to illustrate concepts which are difficult to translate. An example might be movements or activities during the year which overlap. Conversely, stories and portraits may describe information that is difficult to put into diagrammatic form, and may help to put conditions or behaviour of local people into some form of context. Many of the current customs in Khövsgöl are dictated by the local peoples' relationship with the natural environment. This is illustrated particularly well by local folktales and stories, many of which have a strong environmental theme (Section 7.2.5.2 : 95F)

A final tool which may be used, is that of the running of workshops. From this, observers may gauge the concensus of opinion over proposed developments or actions. The number of participants is arbitrary. A small group may meet only for a few hours, whereas a larger one could accept a longer duration.

McCracken (1988) supposes that because these methods are produced within the community, a close alliance with local people may be achieved, and thus the information gathered is likely to be more accurate and in-depth, than that gathered by survey research. In this respect, it is felt that should the 'accuracy' of qualitative data have some form of measure, the use of any singular methodology is open to bias or prejudice in the types of data that it enables researchers to handle with confidence. In reality, it is the skill by which the tool is utilised which determines the quality of data produced. In this case, should a close alliance with local people not be achieved, then the quality of data produce might be called into question. With the use of RRA as a sole methodology, there would be no cross-check or measure of its 'success' – in terms of the generation of a close alliance with local people. However, in this instance, a cross-check is achieved by the use of a different methodology (the formal survey, Section 6.6.5), enabling an estimate of data reliability to be drawn. Although a measure of 'alliance' cannot easily be determined, in many cases during the pilot stage, the researcher was invited for a family meal and the exchange of news and interesting discussion were promoted, in general, by the families themselves.

It is also helpful to subdivide RRA into a number of classes, which approach an objective from different aspects. An Exploratory RRA is described by McCracken *et al.* (1988:50) as:

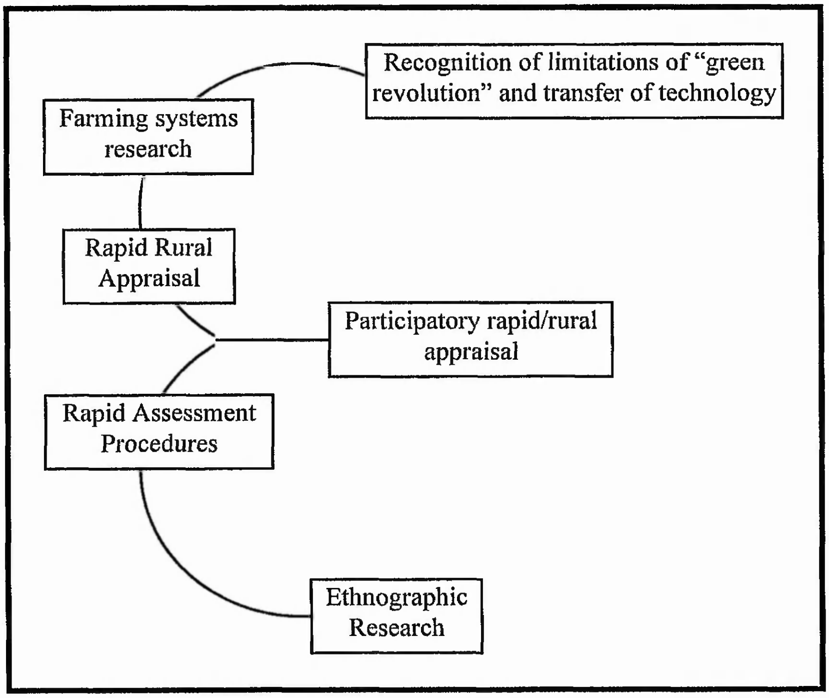
> "Obtaining initial information about a new topic or agroecosystem. The output is usually a set of preliminary key questions and hypotheses".

An example of this by Collinson (1981) developed an exploratory survey that had three stages. The first was a zonation of target groups into domains, using a standard questionnaire. Secondly, an exploratory survey of the target group occurred, using semi-structured interviews, with guidelines for questioning. Finally, a more formal verification study of a larger sample of the population in the target area occurred, using a questionnaire developed from the exploratory survey. This is essentially the methodology that was employed in order to investigate the general structure of the geoecology of Khövsgöl, and will be discussed at length during this section.

A second class of RRA is a Topical RRA. This may be used:

> "[f]or investigating a specific topic, often in the form of a key question and the hypothesis previously generated by an exploratory RRA. Output is usually a detailed and extended hypothesis that can be used as a strong basis for research or development" (McCracken *et al.*, 1988:50).

A third class - Participatory RRA - differs from the other classes, in that it involves villagers and local officials in decisions about further action based on the hypotheses produced by the exploratory or topical RRAs. The output is locally-managed trials or a development activity in which the local people are closely involved. This class of RRA is perhaps most suited to research in Khövsgöl, working with local people in order to determine the effects of proposed tourism or legislative developments, since this method is designed to involve local people in decision-making (Figure 4.8). Figure 6.3 shows how PRA has been developed as a result of needs produced by RRA and ethnographic research.



(Theis & Grady, 1991)

FIGURE 6.3: Background and history of PRA

A final class is Monitoring RRA. This can be used:

> "for monitoring progress in the trials and experiments and in the implementation of the development activity. The output is usually a revised hypothesis together with consequent changes in the trials or development intervention which will hopefully bring about improved benefits" (McCracken *et al.*, 1988:51).

This class of RRA could be used as an adjunct to GIS analysis, to help observe changes in the behaviour and opinions of local people, as new developments and legislation come into effect. This research does not utilise a Topical RRA, and instead, proposes the use of the GIS for the production of new objectives, at which point a Monitoring or Participatory RRA could be used to explore these issues by NGO's or the UN Development project. Local administrators might use a similar approach not necessarily rooted in this methodology (Figure 6.4). The intended scope of this research is defined by the shaded area.

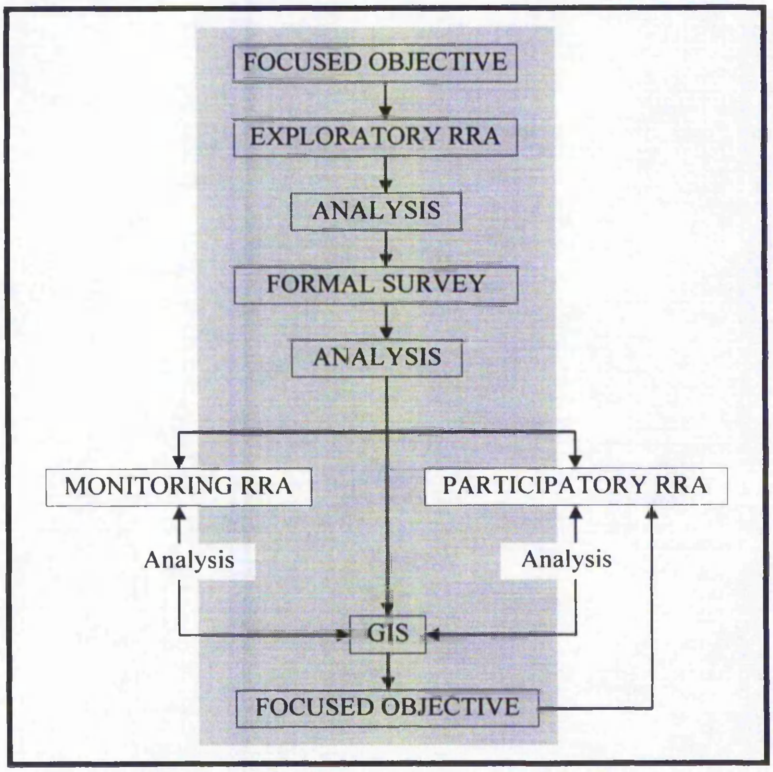
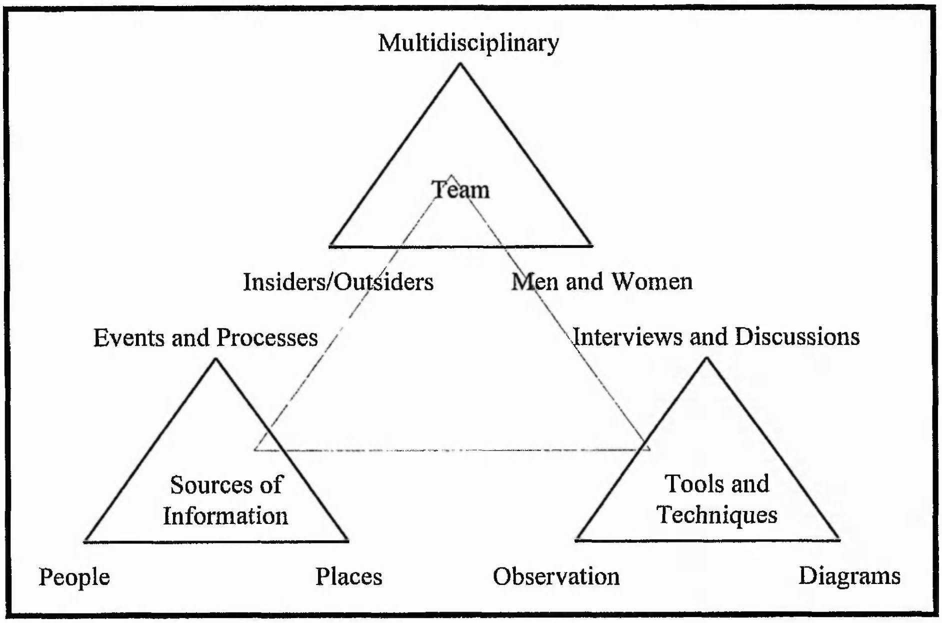


FIGURE 6.4: Flow Diagram Outlining Direction of Research

Although RRA does not follow the conventional project cycle of data acquisition, analysis, planning, implementation, review and redesign, it is commonly used in conjunction with more formal methods, and therefore lends itself to detail, especially at smaller scales. In this research, it is especially effective at building up data that can be referred to as "expert knowledge" (Sections 6.6.4 and 8.2.5) in GIS (Fischer, 1994). By triangulating between RRA, GIS and more formal methods of data collection, it is hoped that greater precision will be achieved and, therefore, a more dynamic and balanced database produced, which is sensitive to changes in the region's geoecology.

Theis & Grady (1991) identify one of the main features of PRA (here regarded as a subset of RRA and therefore sharing the same general features) as triangulation (Figure 6.5) between the components of the team, the tools and techniques used and the sources of the information gained.



(Theis & Grady, 1991)

FIGURE 6.5: Triangulation

Other methodological properties of PRA include its flexibility and informity, where plans are semi-structured and revised as fieldwork proceeds. In this the methodology shares close similarities with the case study, where Casley & Lury (1981:63) suggest that the:

> "approach [is] very flexible, and progress of the study may often not be charted in advance".

Perhaps the most important feature of PRA, in which it is distinguished from RRA as a whole, is its community focus. This is termed the emic perspective, where the researcher empathises with community members and views the world through their eyes (Casley & Lury, 1981). Although the first phase of fieldwork undertaken was strictly an Exploratory RRA, rather than a PRA, the focus of the research as a whole is to explore methods of integrating community data with environmental data within a GIS.

The objectives of PRA are of "optimal ignorance and appropriate imprecision", whereby information is collected to the least amount of detail and employs the least effort that can achieve the requirements of the research aims (Figure 6.6). It is important to identify the state at which expenditure of time and field resources begins to yield ever-decreasing gains, and where data redundancy becomes greater than the accumulation of new data. This information is then analysed in the field, the interpretation of the results forming an integral part of the continuing fieldwork. This type of methodology is able to yield an in-depth, detailed analysis, which is its strength. However, the depth and reliability of that analysis is dependent upon minimising bias in data collection. A good cross section of the community must be interviewed, rather than a skewed representation of some section. Additionally, Theis & Grady (1991) suggest that PRA can easily become "development tourism", rather than providing some academic function. This is distinguished by the quality of analysis throughout data collection in order to minimise bias and avoid value judgements. If cross-checking is not carried out, then there is a danger of the collection of rumours rather than substantiated fact.

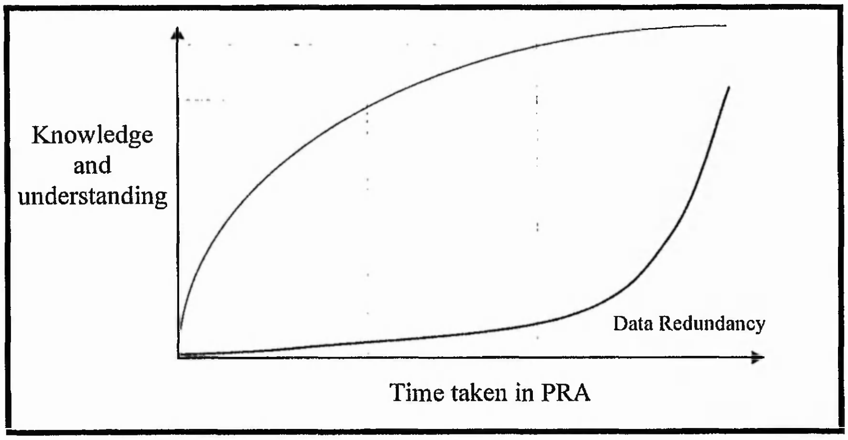


FIGURE 6.6: Rule of Decreasing Gains

Figure 6.6 is linked to the RRA methodology and does not propose that all information can be represented. For example, there may be some information that is unlikely ever to be gained using a RRA methodology, as the time taken is to short for this in-depth information to be broached, or the methodological 'tools' too coarse. Thus, for these types of data, other methodologies should be used, preferably carried out by indigenous Mongolians, or more in-depth, longer term interviews by appropriately skilled anthropologists.

The use of RRA was **not** intended to be an in-depth anthropological study and the researcher does not intend to imply that decision-making for Khövsgöl National Park could be undertaken upon the basis of this data. However, it was important to build up a 'picture' of the community, by which survey data could be placed into context. In this respect, the RRA data was collected in a realistic manner, within the constraints of two months field time. Moreover, the restrictions of Discovery Expedition's logistics made it impossible to travel beyond Hatgal for an extended period. It is also important to review at this point, that the objective of this research is not to build a GIS; rather, it is to evaluate how a GIS might be used and the sorts of data required. It is not presumed, therefore, that this research will collate all the data required for a GIS, but will suggest what sorts of data could be used, under what circumstances and also, some methods of collecting that information in a 'standard' format acceptable for a GIS. In this framework, RRA is used as a methodology by which a view of the community could be built up, to serve as a context by which a formal survey could be constructed and analysed.

Consistent with all types of RRA methodologies is an extensive search of secondary data. From this research, undertaken during the first stage (Section 6.1.1) of work, a preliminary set of questions was produced (Section 7.2.5.1 and Appendix J), using research from the MacArthur project (Sneath, 1995). These questions were then used as the basis for a set of semi-structured interviews (SSI's).

Theis & Grady (1991:52) determine SSI's as:

> "... a form of guided interviewing where only some of the questions are predetermined."

They identify four types of SSI; **Individual**, where representative information is gathered from someone in the community. This produces more personal information, and can reveal local conflicts. **Key informant interviews** are conducted to gain special knowledge from key members of the community who are expected to be able to make comments about the community as a whole. A **group interview** is able to obtain community-level information, but is not useful to discuss sensitive information, and may be misleading if the role of the interviewer is unclear to the group. A final type is that of **focus group discussions**. These are useful to discuss specific topics in more detail. The RRA undertaken during the first phase of fieldwork concentrated primarily on individual interviews, but also encompassed some key informant interviews. A focus group discussion also took place with one of the tourist groups present in Khövsgöl at that time, and focused upon the role of tourism in the region.

Theis & Grady (1991) suggest a number of guidelines for PRA fieldwork, which can equally be applied to RRA. These guidelines were followed during the first phase of fieldwork. Not more than three weeks were spent interviewing local people and key informants. The rest of the time was dedicated to observing local festivals (Naadam), vegetation, wildlife and the environment of the region. The use of Discovery Expeditions (as described in Section 6.4.1) allowed the use of small teams of people from a variety of backgrounds and ages, with differing interests and experiences. A small group was essential, as interviews were usually conducted within the *gers*, which could become very crowded on a physical level, but also might have affected responses if local people had felt outnumbered or intimidated by too many strangers.

As far as possible, triangulation occurred in the use of members of the team, tools and techniques, and the sources of information utilised (Figure 6.5). Group interviews were difficult to organise as there was sometimes a great distance for people to travel, and communications were not efficient; but impromptu meetings of local people sometimes occurred, and discussions were forthcoming amongst them. A broad overview of background information was gained from talking to the

Mongolian people at the basecamp, and then graduating towards interviews with local people, having gained some knowledge of appropriate actions and customs. Information upon the landscape of the region, and the distribution of people was also gained from taking a high vantage point in the mountains above the lake. This also aided in synchronising the physical landscape with the large-scale maps of the area.

Once in the region, community members and key informants were selected from a small region of the National Park, concentrating upon the western and southern banks of the lake. This region was manageable, in the sense that it could be reached on horseback within a day, and the researcher could begin to make relationships with some of the local families in order to talk about more sensitive topics and determine which types and topics of conversation would be polite and acceptable to local people in the presence of strangers. When sensitive topics of conversation had been established, key indicators were identified which could elicit this information indirectly, from observation or other less sensitive lines of questioning.

Within this framework, a cross-section of people from different backgrounds, socio-economic status and ages were interviewed and also, key informants including members of the Khövsgöl National Park administration, two tourist camp managers representing contrasting styles of camp, and the governor of Hatgal. In all, a sample of around twenty families was taken. In general, interviews took place on a family basis, with adult males, females and children taking part.

Questions and methods of working were constantly reviewed after each day in order to highlight any difficulties, or to spot redundant questions. As a result, the interview technique underwent constant evaluation and evolution, depending upon the content of the group present. Some questions could be answered in greater detail if particular sections of the community were not present; for example, women could talk about children much more freely if men were not present in the group. During the interviews, the following list of additional questions was drawn up (Table 6.6). A list of the original questions can be found in Section 7.2.5.1 and Appendix J.

Local People	How often do you get to Hatgal, and what goods do you buy? Has the National Park led to any changes in your lifestyle? Do rangers ever visit you? Is the National Park a benefit to your lifestyle - have you been promised new things? Do you supply food or other goods to tourists? Do your children want to work in Hatgal, or stay and work in the *ger*? What do the National Park administration do in this area? Are the tourist camps good or bad? How soon will things get better? Why did you move away from Hatgal? How do you protect your animals? Do the rangers help you? How? What would you like to buy from Hatgal? Do you have a positive or negative view of the National Park? Do you have a problem with wild animals? How can the National Park help you? Which places do you consider to be beautiful? What is the main problem with Hatgal? Who should run co-operatives and how should they be structured? Research for the Tibet Foundation - questions about religion and religious practices (see Table 7.3).
Institutions	If you had a problem with something to do with the National Park, where would you go? How much tax/permit fee do you pay to the National Park? Are there any Protected Areas/regions where tourists shouldn't go in the National Park?

TABLE 6.7: Exploratory Rural Appraisal : Additional Questions

Additional informal meetings took place with some families, which helped to establish a feeling of mutual friendship and trust, and which allowed some issues to be explored in greater depth. However, because of the nature of the hospitality of the people in this region, there was a concern that repeated visits to families would place a strain on the resources of the family, as reciprocal hospitality was difficult to establish in this instance. In practice, the close relationships made with some families, meant that overnight stays were possible, and the family could be observed over a 24 hour period. This was invaluable for the second phase of fieldwork, when the busiest times of the day could be avoided so as not to inconvenience the host.

6.6.2 Interview conduct

Preliminary RRA work revealed that local families were very happy to welcome visitors to their homes (Plate 6.1), provided those visitors were accompanied by an interpreter. People felt very strongly about being able to communicate and talk with visitors. Most transport in the region is by horse, and as far as possible, families were visited on horseback in order to disturb the community as little as possible. The horses took a slow pace when close to a *ger*, and if a jeep was used, it was parked at a respectful distance, out of the way of any animals and not obscuring the hitching post or door.

PLATE 6.1: Ger on East side of Lake

The interview team was composed of one to three individuals, plus the interpreter for the first phase named Chimgay. A larger team was unsuitable due to the size of the *gers*, and undesirable because a host would have to extend hospitality to a larger group, placing a strain on their resources.

It is usual in Mongolian custom to walk directly into a *ger* without knocking and offer the greeting "*sain bainüüi?*" which means, "are you well, how are you? Figure 6.7 illustrates the layout of a typical *ger*, and it is very important how and where the visitor sits within it.

As the *ger* is entered, it is considered bad form to step on the lintel of the door and entrance should occur with the right foot first. Traditionally, the most respected member of the family, or a highly regarded visitor would sit at the back of the *ger*, close to the family shrine but this position should not automatically be assumed; rather a position close to the door on the southern side of the *ger* should be taken. The head of the family will usually usher a visitor further into the *ger*, into a more respected position towards the south-west, but the back of the *ger* should be avoided unless the family insist. It was aimed to sit on the floor, unless there was a specific invitation to sit on one of the beds, and if a stool was offered, it was accepted, although an attempt was made never to sit higher than the interviewee. Sunglasses and gloves were always removed before entry.

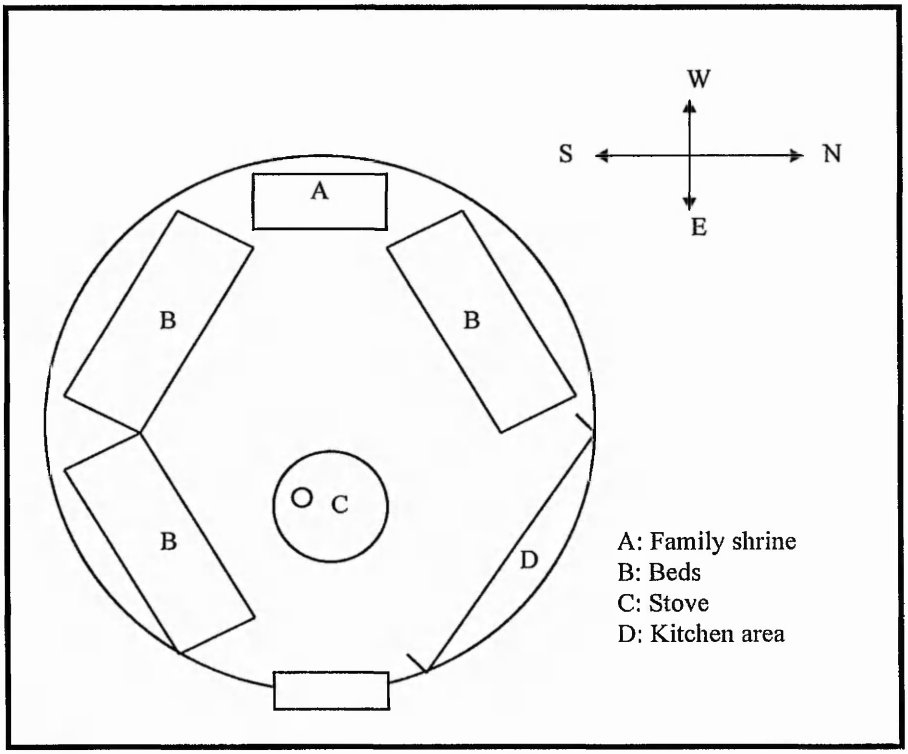


FIGURE 6.7: Plan of a Typical Ger

Some local people live in wooden cabins during the summer months, and the layout of these is individual to the family and may not resemble the *ger*. When this occurred, and there was not an obvious place to sit, an attempt was made to sit close to the stove, whereupon the host tended to indicate a more suitable position.

Generally, conversation did not occur until after the offering of food and drink. It is usual to wait until the host asks about the reason for the visit. Any food and drink that was offered had to be consumed, as it is an indication of respect for the host's hospitality. Food and drink are offered to the person at the top of the *ger* (the most respected position) first, and then sequentially towards the door. Whenever anything was accepted, it was collected with the right hand outstretched, facing up, and the left hand holding the right elbow.

After the offered milk tea has been drunk, the host usually asks why the visitor has come, and what their intentions are in Mongolia. At this point it was polite to introduce members of the team, and begin an informal conversation, stating that the team was there to learn. Conversation usually progressed with a reference to something visible, for example when speaking to a female respondent, one question might be the number of children she has, and what jobs they do around the *ger*. This lasted from twenty minutes to a number of hours, depending upon the relationship with the host. Theis & Grady (1991) suggest that individual interviews should last no longer than one hour, but in reality, the process lasted much longer than this on average, as the team had to observe hospitality and receive food and drink from the host (Section 7.2.3), also being guided by the pace of conversation and wishes of the host family.

One person was designated in control of the interview, and they usually entered the *ger* first so that they were seen as being the most respected member of the team. Roles were alternated at other *gers*, and depended upon the family being interviewed. An example might be where an older member of the team would control the interview where there was an older respondent since the elderly are revered in Mongolia. The use of participants selected by Discovery Expeditions had the advantage of providing a wide range of team members from differing backgrounds, typically representing professional groups such as doctors and consultants. Although each team member may have had different interests and areas of expertise, they were aware of their actions and did not indicate approval or disapproval of what was being said by nodding or shaking their heads. Small notebooks were used to note the progress of each interview rather than large folders which may have given the impression of formality.

Additionally, each team member was allowed to finish his or her line of questioning before another related topic was introduced. In this way, in-depth discussions were created about relatively few topics at each *ger*, rather than trying to get too wide a range of topics covered, which would have meant less detail in each. Other topics were explored during later interviews, after analysis of each set of data. Sensitive topics of discussion, such as hunting, had been identified during the first stage of research and were approached by asking more generally about sources of food and traditional ways of life. Other topics were later found to be sensitive issues, after consultation with some local families and Chimgay. These include discussions about whether a family would wish to have more children

(children are considered a gift, and therefore it is unwise to talk about what your personal feelings are), and questions about numbers of livestock (this is an equivalent question to asking how affluent a family is).

Interview information gathered during the first phase of research was then used in order to formulate a more formal survey, and a different methodology utilised in the second phase in order to apply the survey and gain information suitable for inclusion in the GIS. The use of SSI data for formulation of a survey is discussed in Section 6.6.4.

6.6.3 Sampling Strategy

The study framework was considered to be the limits of the National Park and, therefore, a sample was to be taken of the households of the population in this area. The exact population within the National Park is not static, as the local Mongolian pastoralists move to different pastures each season, and these movements do not necessarily respect administrative boundaries.

Moreover, although some figures were available for the numbers of people in Hatgal *sum* (Table 1.4), these were only of use in the Hatgal *sum* and it was unclear whether people lived in the local administrative centre or were practising a pastoralist lifestyle and whether they were likely to be inside the Park boundaries, or outside.

Consultation with local people during the second phase of fieldwork initially suggested that there would be fewer than 150 families in the Park during the months of June to August. With this in mind, it was decided to approach each household that had a distinct pattern of movements and grazing for its animals, that was located within an estimated 5km buffer of the main road/trail around the lake and was found within the National Park boundaries.

Casley & Lury (1981:188) define a household as:

> "... a person, or group of persons, generally bound by ties of kinship who live together under a single roof, or within a single compound, and who share a community of life in that they are answerable to the same head and share a common source of food."

In terms of this case study, each household was considered independent if it owned its own herds and lived in a separate *ger*. However, for the purposes of the survey, and to decrease the number of households in the sample, those households which shared the same grazing as others at each season, were counted only once.

One of the characteristics of a case study is that it is a:

> "[d]etailed examination of a relatively few persons or items" (Casley, 1981:61)

Enumeration is usually carried out by one person, sometimes with an assistant and, as such, the number of respondents has to be limited because of time constraints and have to be selected in order to represent the various facets of the community.

In this instance, the enumerator was represented by the interpreter, guide and the researcher working together. In this manner, the qualities of an enumerator (Casley

& Lury, 1981) could be maintained through the use of a member of the indigenous community, someone who is fluent in the local language and has sufficient education and a liking for field conditions. This is discussed in greater detail in Section 6.6.5 (Questionnaire application).

In some areas, the distribution of households was clustered so as to require sampling. In this case, households were selected randomly, by interviewing as many households as possible in the area around that day's base camp. The following day, base camp would be moved and the process repeated. Each *ger* or wooden cabin has generally the same outward appearance, and so there is usually no bias to be drawn from the affluence of the respondent until the *ger* is entered. Animals roam the surrounding pastures and it is unclear to which family they belong.

A local guide with extensive knowledge of a great number of households in the region was employed to facilitate communications between the researcher and local people. In this way it was hoped that the presence of a member of the local community would help to generate trust and prevent misunderstandings.

6.6.4 RRA Question Evaluation

From the SSI's conducted during the Exploratory RRA (first phase), responses to each of the questions were extracted and comments made regarding the validity of each question, its appropriateness to the study region, and how sensitive an issue it was for local people. From these responses, a formal questionnaire was drawn up.

Each question would be presented to a household, rather than answers elicited over the course of an interview with no predetermined direction.

The following question RRA question evaluations do not relate to data which can be directly input to a GIS. At this stage, they are necessary in determining the kinds of responses that can be expected and also give a context by which the later formal survey can be interpreted. In the context of a GIS, this information would be held as 'expert knowledge' by the operator, allowing them to manipulate the GIS database in a logically consistent manner (Section 5.2.6). Any production of maps or statistical data using a GIS should be accompanied by some form of commentary. This information could also be present within the metadata (Section 5.2.7) about each dataset, or be provided as contributions within an online help system. It is not proposed that this kind of GIS system could be manipulated by any operator in order to function as a decision-support system. As in any management situation, only a few individuals are qualified to make decisions. However, it could have much wider functionality in terms of dissemination of information or provision of data about the current status of the Park.

Herding Practices

- *Please tell us a little about the availability of water for your livestock during the year*
- *How often, how far and by what means do you move during the year? Please mark on the map:*
  - *- pasture/days moving/distance/how/staying period/notes/local names*
  - *- spring/summer/autumn/winter*
- *If you move different animals to different places, please describe this below*

Most people will stay within a few metres of water throughout the year, either using the lake, or a tributary. Water sources will be followed as people re-site the grazing for their herds each season, migrating 10km or more during the course of the year. All animals move with them. A map was not available for this phase, but many people seemed able to use a map, and with the help of interpreters who have some experience of the local area, these questions had the potential to generate excellent responses during the survey phase.

- *Are there any places where you would prefer not to herd or don't want to go?*

When this question was asked, it generated responses linked to adverse grazing conditions, or places too far away from the *ger*, and therefore difficult to protect from the wild animal threats in the region - mainly wolf. This question was never taken to mean ground or places with religious significance (Section 1.5.3).

- *How do you think the changes in the structure and dimensions of agriculture since 1950 and 1970 have influenced the life of the people?*

Most people, when asked, expressed an opinion that there had been no major changes in the region, but referred generally to the migration of people away from Hatgal, back into the countryside, since the Russian withdrawal and the decline of industry. Older changes tended to be forgotten and accepted as part of life and therefore not as a distinct change away from the normal.

- *Do you make any payment for use of land? How much? To whom do you pay it?*

No payments are made, but a contract is signed with the Governor of Hatgal and the National Park agreeing to certain conditions and regulations within the Park.

These are currently being reviewed, to be based upon an individual contract with each family within the Park.

- *If the animals often get diseases, what do you do? Why?*

There are home remedies used for minor problems like cuts, but there is no veterinary assistance so animals frequently die.

- *Are there any herding tasks to do in your household which cannot be done because there is not enough labour? What are these tasks?*

Each herd is usually followed by a junior member of the family to help protect the animals against wolves. Children follow the herds during the day and return in the evening. Sometimes when a family is small and there are fewer children, or relatives live some distance away this cannot be accomplished with each herd, and only the animals most at risk are visited at intervals.

- *Do you ever cut grasses? How? Why?*

Grasses are cut in winter and stored as silage

- *What resources does your household use?*
  - *good pasture, average pasture, poor pasture, good farmland, average farmland, poor farmland, vegetable plot, machinery (specify) wells, other (specify)*
  - *and link to owner, money value, amount of time used per year, length of time of use rights.*
- *Please tell us about your use of pasture, fodder and concentrates for your livestock. Map sum and show pastures used by each herder:*
  - *quality of pasture [good/medium/poor]*
  - *pasture used [land size/spring/summer/autumn/winter]*
  - *hay [quantity]/ fodder, concentrates*
- *Please tell us where you get your hay, fodder and concentrates from for your livestock?*
- *Do you think your pasture is enough for your livestock? If so, why? If not, why not?*

There are no farmland or vegetable plots, and machinery is not used in the region. These questions are fine in principle, but summer pasture is always likely to be good due to the type of the growing season, and winter pasture is always likely to be 'poor' especially since the increased use of the region in summer. Concentrates are not used in the region, and are not available anywhere locally, if indeed they exist at all. A good map is required for families to plot the extent of their pastures. Amount of pasture is not a limiting factor in summer in this region, but in winter, grazing which has been degraded by summer use is not able to support herds. People may have to move to a different region in winter.

- *This herder is:*
  - *rich/middle/poor*
- *How many animals do you herd?*
  - *collective/private/state/kin's animals/friends animals/other institutions*
  - *sheep/goats/cattle/horses/camels*

A subjective judgement about the economic status of a herdsman may be made based upon the size of the family and the numbers of livestock. However, to ask how many animals are herded is a sensitive question, likened to 'how much money do you earn', and linked to taxation.

Labour, Jobs and the Economy

- *Economy +ve/-ve*
- *Ecology +ve/-ve*

The economy is seen as negative, but this is perceived as a long-term problem rather than just to do with the National Park. The ecology is seen as positive, but there is concern how long this will last, the effects of the tourist camps on the environment and how they can best 'save the nature' (Sections 1.5.6 and 1.5.7).

- *Breakdown of labour by major tasks and month by all adult men and women in the household?*

This is a good question to illustrate the unequal distribution of labour within the society, and therefore within the Park. Women tend to have certain 'traditional' jobs, which are not usually taken by the men and women may also be employed within Hatgal - effectively holding down two jobs. This needs to be addressed by any tourism planning, which should encourage men to take up other positions where they can make a contribution.

- *Have the recent economic changes had any effect on women's tasks [e.g. making things at home which they used to buy in shops a few years ago]*
- *Do you buy any goods from town which were made at home by women 10 years ago? What are they?*
- *Do you prefer the home-made goods or the bought goods? Why? Would you like to start a small business (for example sewing, restaurant, roadside-selling)? What sort of business?*

People living in *gers* tend to buy fabrics for the *ger* and clothing in Hatgal if they have have the capital and the fabrics are available. They then make the clothing at home. Most local people would like to be involved in some sort of business, for example co-operatives, but lack the capital to begin, or knowledge of operating practice.

[ask women] Do you have your own funds which you can use how you like?

No one has any funds that are 'personal' since each family is barely operating above subsistence level. The only time hard currency was observed, was during the vodka ceremony, where it is polite for the host to pass the guest a *tugrik* note underneath the bowl of *arkhi*. It is considered extremely impolite for the guest to refuse this.

- *Has anyone in your household moved to a different area?*

Yes, this often occurs, with some members of a large family migrating to Ulaanbaatar or Erdenet for work.

- *Is there any problem of unemployment in you area? If so, please describe it.*

Unemployment mainly results from the decline of industry in Hatgal. Most households also have herds, and so their time is taken up running the *ger* and taking care of the animals.

- *Do you think the policies of your government represent the interests of the people?*
- *What do you think the results of privatisation will be in the future?*

In this remote region, these questions do not equate to anything that local people can make an informed decision on. It takes a long time for news to travel from Ulaanbaatar, and politics are not seen as particularly relevant in the lives of the countryside people.

- *Do you have a national healthcare service? Is it hard for you to see a doctor? Can you get the medicine you need? Do you need to pay medical fees?*

There is a local clinic in Hatgal and this is covered by the government. Medicine is unavailable in Hatgal, because it is so difficult to get it to the clinic from Ulaanbaatar. A suggestion was made that tourist companies coming from Ulaanbaatar should take some medical supplies on their truck in addition to the goods they were carrying.

- *Are there any products of your household economy that you produce only in order to sell?*

Most families work under a subsistence economy (Sections 1.5.5 and 1.5.6) and therefore do not produce enough of a surplus to be able to sell to tourism companies. There is no demand for dairy products in the region, as each family produces enough for themselves and does not have the capital to buy more anyway. If a cash surplus could be obtained, then clothing and crafts could be produced to sell to tourists. Currently the economic structure is not present for this to occur.

Hunting

- *Which role does gathering play in your consumption? What are the effects on the environment?*

Gathering of vegetables is extremely rare - if at all, in Mongolian culture, vegetables are seen as 'soft'. There are, therefore, no adverse effects on the environment from this.

- *Is there any illegal hunting round here: please describe*

This question elicited a number of responses from people, usually avoiding the question by saying that hunting was illegal, and therefore it is like stealing from the state. It is very difficult to ask this question to gain reliable data.

- *Are there any animal species which should not be killed? Why?*
- *When do you hunt different types of animals? In which season? How? Why? How many animals do you try to kill?*
- *Which kinds of animals are hunted most and what are the reasons for this?*
- *How have these processes influenced the number of animals?*

The new hunting law was introduced on April 1st 1995 and this is usually quoted, on the basis that certain animals can be killed at certain times of year. The main 'animals' that are said to be hunted are fish. Animals such as ibex and bear have been shown to have recently declined within the Park boundaries (Harper & Bennett, 1995). It has been suggested that ibex is sometimes hunted by local people as a source of food, and bear parts are poached to sell to the Chinese medicine market, and Western tourists. Overall, it is very difficult to gain reliable data from these questions when in the form of a questionnaire. It is more likely that local information about hunting would be known more accurately by local Rangers (both those belonging to the Park and also local authorities).

Tourism

- *Questions about level of visitor knowledge concerning behaviour in the ger.*

Mongolian people do not expect foreigners to know their customs, but it is obviously polite for them to do so. They do expect foreigners to know some

Mongolian language, or to have an interpreter with them as they would like a chance of conversation and would find it impolite if a foreigner entered their *ger* unprepared to do so.

- *Tourism employment - contrast with men's work and women's work*

As previously discussed, there is an inequality in the number and type of jobs for men and women, women being expected to continue their role in the *ger* in addition to any other job they may have.

- *Would you want your children to be involved in the tourism industry?*

There were no objections to this.

- *Are there any places where visitors shouldn't go?*

The usual response to this question is concern over dangerous regions, and the idea of tourists walking in the mountains alone. When questioned further, responses such as 'any hill with only one tree on it' are offered. There do not appear to be any particularly sacred sites in this region of the National Park.

Miscellaneous

- *What resources are most useful in counteracting the following disasters? What do you do in times of natural disaster?*
- *What impact do tourism and visitors have on the character of these disasters?*
- *Who is best placed to obtain these resources and who decides who uses these resources?*
- *Are there disputes over the use of such resources, when do they tend to occur and how are they resolved?*

- *If a spring, river or lake were polluted, what would you do about it? Why?*

People do not usually like to talk of disaster or loss. It is quite insensitive to ask about death or loss of animals, and answers to questions of this nature will be avoided. Nothing will be attributed to the cause or effect of the disaster. Tourists have not (so far) been targeted as the cause of any disasters, only the reason for the reduction in winter grazing. Disputes over resources (in this case land) are very rare. Nobody owns the land and local people know which land is used and which is not.

- *If you have new energy sources, do you like them? If not or if so, tell us the reasons.*

The main energy source is wood and no others are planned, bar the HEP (Hydro-Electric Power) project in Hatgal which will benefit mainly settlements in the aimag,

- *How do you usually deposit your garbage?*

There is not usually any garbage to dispose of. It is very unusual to buy anything from Hatgal. Bags are recycled and all food is eaten (it is considered very wasteful and rude to leave any food). Any other waste is burnt.

- *What do you do with your animal dung?*

Animal dung was not observed to be actively collected, but when dry makes a good source of fuel for the *ger* stove.

- *Have you heard any stories about ALMAS or ALMASTI? Please note - find where originated.*

Apart from anything else, this question was a good tension-breaker, especially when asking later about hunting or a sensitive subject. The almas are a mythical race of small people, with similar connotations to the Yeti. Local people in this region had not heard of the almas.

- *What are the causes of drought and desertification?*

Natural conditions. Disasters are not generally attributed to religious events.

- *From what source(s) do you obtain your fuel? Enter the cost in local currency.*

Countryside people don't require fuel, but could buy it in Hatgal. It costs about US$24 to fill a jeep. Most fuel is bought by the tourism companies and the National Park to keep their jeeps running between the camps and Mörön.

- *Do you like washing in springs, rivers and lakes? What do you wash (yourself, clothing? why?)*

This is quite a personal question and could be asked in a different way, to find out about attitudes to water. Most water is carried to the *ger*, and clothing would be washed in water heated on the stove and hung up from the roof spokes to dry. Detergents are not readily available.

- *Are you happy with your dwelling? Would you prefer some other kind of dwelling? Please explain.*

Living in a house in Hatgal or a *ger* seems to be a matter of necessity, depending upon whether you have herds. However, several people were encountered living in *gers*, a distance from Hatgal who had experienced a university education outside the region. One had a biology degree and previous employment as a Park ranger and another was a teacher.

6.6.5 Questionnaire Design

Questions for the community survey were derived partially from work done in the MacArthur project, Cambridge (Sneath, 1996), and partially from a pilot study, undertaken during the first phase (Fielding, 1995). As the overall aim of the survey was to contribute data to a GIS, questions were formulated along the lines of locating the movement of families during the year, and identifying activities important to their lifestyle, in an attempt to focus upon those families, and in particular those activities which might be most influenced by tourism.

To this end, the interview conducts and responses from the first phase were analysed with respect to the manner in which each question was expressed and the types of information that were gained from each.

Interviews were conducted with Enkhtuyaa (1996) as interpreter, asking each question, and translating it. The researcher's job was to complete each survey response form, and ensure that each question was asked in the same way, and that interesting and relevant topics of conversation were followed up.

The survey was divided into sections (Appendix 9A) covering Herding Practices; Labour, Jobs and the Economy; Attitudes to Hunting; Attitudes to Tourism; and other questions concerning the National Park. There were two potentially sensitive questions in the survey; questions 14 and 32 which dealt with numbers of animals owned by the household, and whether animals were hunted by members of the household, respectively. These questions were placed in the survey at such points where (a) the interviewee was already comfortable about answering questions, (b) the interviewee had just answered some fact-based questions, and (c) the subject was immediately changed after this so as not to press any uncomfortable line of questioning. Proxy indicators were also employed; asking whether a family paid gun tax tended to give an indication of the presence of hunting, where the direct question was denied.

Although preliminary interviews had been open-ended and avoided yes/no responses, the formal survey actively sought this response, in order to more easily link responses within the GIS. However, if the answer given did not fall directly into a yes or no category, then the answer given was translated for later post fieldwork analysis. As part of this probing, 'who' and 'why' were used extensively throughout the questionnaire in order to gain in-depth information about topics where there were strong feelings.

The name of the head of the household and the GPS measurement of the location of the *ger* were noted on each response sheet, along with any other comments about the circumstances surrounding the responses of each family, for example whether there were any feelings towards the content of the questions, or whether a particular family mentioned additional information that was useful for the study as a whole.

A Kalidor penpad computer, battery charger, solar panel, GPS and AA battery charger were carried with the expedition to test suitability for this environment, the responses to the community survey to be input directly to PenMap software running on the Kalidor (Section 6.8).

6.6.6 Questionnaire Application

Theis & Grady (1991) make some general points about interview technique, and each of the following points is discussed with respect to how interviews in Khövsgöl were conducted. Before the interviews, all members of the team, the interviewer, interpreter and local guide, were informed about the topics of conversation, and appropriate behaviour. Ganbaatar (the local guide) in particular, was able to contribute towards the work by helping to translate many of the questions from Mongolian, to colloquial Mongolian. There was an awareness of the influence of the age and gender structure of the team and as such, a female interpreter was employed in order to make interviews with women easier (discussed in paragraph preceding Table 6.6). Ganbaatar was able to sit in on interviews that took place with male family heads, but would leave if an interview took place with a female family head. The name of the family head was determined by an initial question, but the interview did not necessarily take place with this person, as they might be unavailable. This name was used as a code to identify completed questionnaires with their GPS measurement.

Casley & Lury (1981:118) suggest that:

> "the enumerator must establish a rapport with the respondent if the interview is to be successful".

The team's interpreter, Enkhtuyaa was not a local person, but was able to develop a rapport with different members of the community by working with Ganbaatar who helped to introduce her to local people and give them a basis for trust. As a young female, she integrated well with older family members, who tended to regard her as a daughter, and also worked well with female interviewees. She was able to ask many sensitive questions that would have been inappropriate for a male stranger to ask. Ganbaatar was able to clarify points and act as a temporary male 'head of the team' when talking to male family heads. Subsequent to each group of interviews, performances were reviewed and evaluated in order to pinpoint any discrepancies in actions or translation that were occurring.

The team was aware of the daily schedule of local people, in that early mornings and evenings were important for milking and cooking. This meant that interview work did not often begin until 10:00am, but would continue until around 7:00pm, and then from about 8:30 until 11:00pm. After food and drink had been accepted, the interview began when the host asked the reason for the visit, and a personal introduction was made, followed by an outline of what the survey was about. It was very clear that this first contact was to set the scene for the course of the entire interview, if a bad impression was made at this stage, then families were reluctant to talk or be open about their feelings.

> "The respondent's first impression of the enumerator will affect the entire course of the interview" (Casley & Lury, 1981:131).

As far as possible, the questionnaire was presented in a non-formal manner, but this was sometimes difficult due to time constraints. Within these constraints, as much time as was polite was spent at each household, which sometimes allowed for longer discussions about some of the issues raised in the questionnaire.

Leading questions were avoided; however, in some cases people were not sure what was meant by a question and clarification was required, or an example given. Additionally, translation was expected to be as precise as possible, but it is unknown how far interviewees responses deviated from the translation offered by Enkhtuyaa, but an allowance has to be made for her limited vocabulary at least in the initial stages of research. It must be accepted that Enkhtuyaa would translate consistently, so that any errors would also be consistent throughout the results. Local people often asked for advice or comments on some of the issues raised, especially concerning the possibility of tourism in the region. Great efforts were made not to discuss or give advice on these subjects (beyond that of a broad descriptive nature in order to observe politeness) as it was not the objective of the team to influence the views of the community.

The interview was concluded by thanking the host politely for their hospitality and leaving some form of gift with the family. This was generally a small token, such as postcards, sweets or items of jewellery. Money was avoided as a gift as far as possible, although in one case, after consultation with Ganbaatar, it was considered to be more appropriate.

6.7: Tourism Data

6.7.1 Questionnaire Design

Another aspect of the fieldwork was to consider the character and role of tourists to the region. This was approached by the application of the visitor questionnaire (Appendix 9C) which was intended to gain an idea of the reasons tourists were visiting Khövsgöl, and what they hoped to experience while there. This could then give some indications for the direction that tourism may take in this region, and provide a focus for the Park management plan to address issues important to the tourists.

During the Exploratory RRA in the first phase (Section 6.6), some SSI's were conducted with key informants representing the managers of tourist camps along the Western shore of the lake. Additionally, what might be termed a 'focus group' discussion was conducted with Discovery Expedition participants on the third phase of their expedition. Discussion was formulated around types of tourism that are occurring in the region, possible activities that could take place and the likely impacts of these upon the geoecology of the region.

6.7.2 Questionnaire Application

The questionnaire was distributed to tourism camps by the head ranger of Khövsgöl National Park on his visits to each camp, and also by the ranger at the entrance to the Park, to vehicles carrying tourists. This occurred while the community survey was being undertaken in other areas of the Park, and so there was less influence upon the methods of distribution. Although the rangers were happy to distribute the questionnaire, and methods of distribution had been discussed, there were a large number of uncompleted questionnaires returned at the completion of the community survey. Explanations for the lack of responses may have been language barriers, where the main language was not English, and also lack of interest in completing the response. In total only 30 questionnaires were returned from a sample of 100. This represents a very small percentage of an expected foreign tourist population (staying in fixed camps on the Western shore of the lake) of around 1,000 in 1996.

6.8: Hardware and Software

The hardware and software suitable for Khövsgöl depends upon the availability of an energy source, the physical environment in which they are required to work, the hardware requirement for the software to run on, integration with hardware and software in other departments, and the personnel who will be required to maintain and run the system.

There is, at present, no reliable source of electricity in the Park, besides privately owned diesel generators. Electricity is sometimes available to Hatgal in winter, but depends upon the availability of fuel. There are plans for a Hydro-Electric Power Station (HEP) which will be situated a few kilometres downstream from Hatgal and which is to supply the town of Mörön primarily, but will also provide energy for Hatgal. In the short term it is envisaged that a generator could power hardware at the Park headquarters in Hatgal before a permanent source comes on line.

However, a more stable electricity supply seems to be supplying Hatgal at least. During 1996, Togtokhnyam the Governor of Hatgal was using a PC in her office. Electricity is available in the Park, although at present, unreliable. The use of a UPS (Uninterruptible Power Supply) would allow computer systems to work safely in conditions of variable current. They are standard equipment even in MNE's Information and Computing Centre (Baker, 1995), where they can provide up to two hours computing time in the event of supply failure. Some might take the view that in the absence of a reliable, permanent power supply, newer technology is not a priority. If this were true, then a good proportion of the world would be denied this type of technology. Hatgal does have an electricity supply (dependent upon the availability of fuel) and this is supplemented by the use of generators. A computer system draws about the same amount of power as two lightbulbs and it is not proposed that the system would be running 24 hours a day. Several hours per day and additionally on demand would be sufficient. Moreover, since the system would be located permanently at Hatgal Park Headquarters, other energy generating hardware could be installed, such as solar panels. These would easily be sufficient to generate power for the computer system and also store excess energy in batteries for later consumption.

For the purposes of data collection, solar panels were tested in the field. During the first phase, a Solarex MSX30L panel was tested to determine its efficiency at providing power for two GPS units and an Olivetti laptop computer. A 12V shunt was wired between the panel and the 12V battery recharger, as the panel generated up to 21V depending on the intensity of sunlight. The battery recharger was able to charge four AA-type batteries in two hours, but required monitoring and manual slowing of charging as the batteries seemed to be charged too fast at times. Charging worked best in a shady position, over a longer period of time, but the panel's size and rigidity meant that it was better suited to a base-camp or *ger*, perhaps to be used by a ranger, for recharging each day (Plate 6.2).

PLATE 6.2: Use of Hardware at Basecamp during 1995

The second phase of fieldwork was entirely mobile and conducted on horseback. A lightweight, flexible panel, which could be tied to the back of a rucksack, or on top of the pack on the packhorse was tested. Despite rough treatment when pack was being loaded and unloaded, it performed well, and provided enough charge to maintain the GPS and Kalidor penpad computer.

This type of equipment was employed, in order to determine the viability of its use in the area. A notebook and pencil is one way of collecting data which could be used in a GIS, but as discussed in Section 5.2, it would then be subject to further translation in order to convert it into a digital format. This data collection stage represents one of the largest proportions of investment into an Information System (Section 5.6.1) and, therefore, has the greatest potential to benefit from improvements in methods of data collection and pre-processing. Use of digital data collection methods in the field could, if viable, allow data to be translated into a digital format, directly at the moment of collection by the person who collected it. This would remove a number of stages from the data pre-processing stream and cuts down on the potential of error introduction which can be caused by operator error in miscoding or miskeying and translation of the information.

Additionally, hardware such as GPS units are the focus of training packs that Khövsgöl National Park rangers already have in their possession. This would mean that they can be introduced into the region with a minimum of extra training. The use of flexible solar panels to power the hardware is a low-cost power solution. Whereas generators cost a significant amount and rely upon the availability of fuel, producing fumes and noise pollution, the solar panels are far lighter, easily transportable and are able to generate power even when it is overcast. They can also be used to recharge batteries, ensuring that that Park is not polluted by the disposal of discarded cells.

Whereas a notebook and pencil are already in use, it is an important objective of this research to evaluate the extent to which a GIS system could be used here. Since data collection represents such a major proportion of the GIS costs, then it is important to explore ways in which these costs might be reduced, both in terms of financial cost and also improvement of data quality.

A multi-user platform (UNIX/NT) was not felt to be required in Khövsgöl as high computational analysis and modification of the database could take place in

Ulaanbaatar where ARC/INFO GIS runs on a SunSparc-20. It was felt that a GIS in Hatgal would be PC-based where either ARC/INFO or a scaled-down version of that GIS was running. This would remove the need for a dedicated system administrator which is a requirement of management-hungry UNIX based systems. The simplicity of a PC system would mean that personnel training would be easier. Any hardware needs to be portable, reliable and capable of operation without lengthy or complex training. Additionally, it would be better if hardware did not require specialist parts nor had non-standard operation or connectivity.

As much of Mongolia is able to receive and send Email (Magicnet, 1996), it is envisaged that this facility will extend from Mörön to Hatgal at some point, and the PC could be linked as part of a Wide Area Network (WAN) to Ulaanbaatar, where data exchange could take place.

6.9: Limitations

An attempt was made to interview each family, with the following exceptions. Two families refused to be interviewed because they were afraid of the nature of the questions. Some families north of Hankh were unwilling to answer questions, and only a GPS measurement was taken. A sampling strategy was adopted in Horoh, as there was insufficient time to interview all 170 families. This situation was exacerbated by the onset of bad weather and dangerous rivers, which forced a fast movement to Dolon, bypassing approximately 7 families.

The translation of some questions was revised during research in order for the meaning to be understandable to the greatest number of people. People north of Hankh, through Horoh and Dolon were often unwilling or suspicious about the questions. The pack horse developed a sore back during research and its condition regulated the distance that could be covered each day.

Around one hundred visitor surveys were distributed by members of the National Park administration to each of the tourist camps in the vicinity of Hatgal. To date, only thirty questionnaires have been returned, which represents only a small percentage of a total tourist population of around 1000 in 1996.

Privacy for the interview was deemed desirable by Casley & Lury (1981), but in practice was difficult to achieve, as it would have been impolite to ask visitors to leave, and repeat visits were not viable. In only one instance was the validity of answers questionable, in that a local ranger was present in the *ger* at the time of interview, and therefore questions about hunting would not be appropriate.

Although the team stated that they were visiting each family in order to learn, there were fears among local people that sensitive information may be later told to officials. This was especially true for some community groups, particularly towards the north and west of the lake.

Chapter 7 illustrates the results of fieldwork including the community survey and presents visitor questionnaire responses.

Chapter Seven

RESULTS

Chapter Seven

RESULTS

7.1: Introduction

This chapter presents the results of the two periods of fieldwork; firstly, the Rapid Rural Appraisal (RRA) accomplished in 1995, when around twenty semi-structured interviews were undertaken; and secondly, the Community Survey undertaken during 1996, when 134 households were asked questions about their lifestyle and their relationships with the National Park. These are laid out as a series of pie charts and bar graphs, illustrating the responses to each question.

The results of the Tourism Questionnaires undertaken during 1996 are very sparse, due to non-response. The information presented here is therefore not reliable enough to draw statistically significant conclusions from, but may illustrate some interesting points, to which tourism decisions can later be referred.

The results of the hardware and software trials will then be described, indicating both the data availability for a Khövsgöl National Park GIS, and also the environmental constraints that face any hardware use. Additionally, the potential for the use of a GIS in this context will be strongly influenced by the management structure of the governing bodies, and in this respect, management issues are discussed at the end of this chapter. A computer disk is enclosed at the back of this thesis containing the raw data for the results of this research.

7.2: Community Questionnaires

7.2.1 Reappraisal

Community survey findings are presented in two sections, representing the pilot study (Rapid Rural Appraisal undertaken during 1995), and the more formal community questionnaire (undertaken during 1996). The Rapid Rural Appraisal (RRA) is composed of a series of about twenty semi-structured interviews, whereas the community survey has been condensed into a number of charts illustrating patterns of responses. The raw data for these questionnaires are presented on a computer disk at the back of this work in SNAP software format.

7.2.2 Findings

The interviews are presented here as the interpreter translated them. Due to the expertise of the interpreter, responses must be assumed to be 'interpreted' rather than 'translated' exactly. To avoid further bias, the interviewer has recorded the interpretation exactly as it was said, and so there may be errors of grammar in the presentation. It was felt that correcting this, might affect how responses were viewed, and lessen any strength of feeling that an interviewee might have put across.

7.2.3 Errors and Biases

Impossible to quantify, but having an important affect upon the results of the community survey, is the effect of translation upon both how the question is presented to the interviewee, and how the response is classified. The diversity of responses must, through necessity, be condensed, due to the limited nature of the interpreter's vocabulary. Of all biases, this must have the greatest effect as there is no way of knowing whether a response might be considered differently, had the researcher been able to translate accurately for herself.

It is unknown to what degree Chimgay or Enkhtuyaa accurately translated words, although some idea of how strongly people felt about particular issues was gained from their body language, actions and strength of voice. However, this bias would have been constant throughout the interviews as the interpreters would have translated consistently, even if one allowed for inaccuracies. Close listening was essential during the interview process in order to make some attempt to verify what the translator was saying. Towards the end of the fieldwork, it was possible to gain the gist of what was being said by the interviewee and thus gauge how well the interpreter was performing.

However; as the learning experience is an ongoing process, it is important to realise that the risk of errors in translation begins at a high level, and decreases over time as responses and the questions themselves are discussed in detail at the end of each day. Of necessity, some questions had to be repeated, as the interviewees requested clarification. This was mainly due to the use of Mongolian words not local to the region. These instances were often resolved by the guide (who was a local man), expanding upon the meaning of a particular word. In one instance, the Mongolian word for 'tourist' had to be explained to an interviewee, as they had no concept of a tourist, having never met one.

Although this explanation took place, the interviewee was never 'helped' in the sense of interrupting and answering for them. The questionnaire was even given to a man in his nineties - although the interpreter had to disregard protocol by sitting next to him, and speaking rather more loudly than normal.

During Rapid Rural Appraisal (RRA), some questions were asked that were regarded as 'insensitive' or yielded 'vague' responses. Since the questions were part of an informal interview, it was easy for the host to mention that they did not want to answer, or felt the question inappropriate. These questions were constantly reviewed in order to refine the interview process.

Most inappropriate questions were screened primarily by interpreters and guides during normal discussions. However, some only came to light as part of the interview process itself. For example, questions to female interviewees about families and children were very successful. However, when a male interpreter was used, he spoke of feeling that the questions were inappropriate for a male 'stranger' to ask, and that the host would feel uncomfortable talking to him. These gender issues (Keesing, 1976) were bypassed during the second phase of fieldwork in 1996, as a female interpreter was employed while a male 'guide' with an outgoing personality was present where a male host was interviewed.

The presence of the male 'guide' was invaluable on more than one occasion, as well as being local to the region, he was able to bridge the gap between the interviewer and the interviewee, and add reassurances during the introduction process[1].

A further bias that would have been active at the pilot RRA study stage, was that of failure to probe responses sufficiently. At this stage, a failure to gain sufficient in-depth information would affect the selection of questions for the formal survey. However, due the nature of RRA being an efficient mechanism to gain an accurate and wide 'picture' of a society in a relatively short period of time, it is unlikely that a major facet of the geoecology of the region was unobserved and un-discussed.

At no point is it felt that the responses of local people to the pilot study should be taken as **entirely** accurate, in the same way that information about the distribution of animals in the region should be relied upon if it was over a number of years old. In particular, although some large-scale patterns of responses could be drawn out from the data, small-scale analyses would require greater amounts of more up-to-date information upon which to base planning decisions. Any information collected in this way represents a 'snapshot' of the community or situation at that moment in time. Even if by some measure its accuracy could be proved at the time of collection, **subsequent** to this collection the situation is likely to have changed at some level. The researcher does not advocate that any such community data is 'accurate' some time after it has been captured. However, in this instance, since similar information was collected using an opposing methodology, then it can be

[1] Probably the most important aspect of the interview, as it presented the context by which local people

assumed that the responses were representative of the community at that time. In contrast, local National Park officials must also be concerned about the accuracy of data they collect, due to the negative feelings they raise in a substantial proportion of the Park's population and their lack of communications with local Government officials.

As already mentioned, the purpose of this research was not to conduce an in-depth anthropological study, which would generate a detailed account of all aspects of life in Khövsgöl National Park. It is accepted by the researcher that some aspects of culture and community were likely to be overlooked, notably, the absence of data about the section of the Park community who overwinter within the National Park, but spend the summer months outside. In this case, these people were not taken into account in the application of the community survey, since they were outside the Park boundaries at this time, but are acknowledged to be of importance to the ecology and community of the region. Using the precepts generated by this research, information about this sector of the community should also represent part of the Khövsgöl National Park GIS database.

Nor was it the intention of the researcher to produce a working GIS or fully document every type of data that would be required for decision-making. Each of these are outside the scope of this thesis and depend in the main upon the National Park managers and administrators to gather information which supports their decision-making.

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would frame their answers to questions.

During RRA, some areas of society were explored even though the responses would not be used to construct a questionnaire for the next phase of fieldwork. These included lines of questioning which probed attitudes about the National Park, in particular the functioning and positioning of National Park administration staff within the Park and community. In order to break down the Park administration into working 'units' with their own areas of responsibility, individual names were used to indicate positions. These could be seen as 'leading questions' but only followed open questions designed to gauge attitudes to the Park management as a whole. They also helped to make sure that future survey questions were not constructed with a bias from the viewpoint of the National Park.

Interview length was fairly easy to determine at the RRA stage, depending mainly upon the host response and interest. Semi-structured interviews were a flexible tool that could easily be adjusted on the spot from a simple overview of a family, to an in-depth discussion about one or more community issues. The more formal questionnaire was, by contrast, very inflexible in length. At its most efficient, it could take only 20 minutes (exclusive of the observation of proper social protocols both at the beginning and end of a visit). Thus an interview could last anything from one to three hours, also being dependent upon the hospitality of the host, whether a meal had been prepared, and how involved other members of the family became in discussing appropriate responses to questions.

Therefore, in some cases of formal questionnaire application, the survey length was too long (Theis & Grady, 1991), but at that stage there was little that could be done to rectify this and in most cases this would have been inappropriate. Overall, a balance was achieved where the survey could be completed quickly and formally in cases where respondents were obviously not interested in pursuing a conversation.

Elite Bias (where more weight is given to the views of the educated and articulate) (McCracken *et. al.*, 1988), was more of an influence during RRA as only those households that held a conversation had their thoughts recorded. There was no bias in terms of the selection of households as all *gers* look very similar and of those dwellings which did exhibit some unique characteristics, care was taken to select a wide range, rather than concentrating on those people that were obviously well educated or better off.

Indeed, in some cases, local people suggested which families to visit on the basis that they were well educated. Although this was noted (to retain politeness), efforts were also made to visit elderly people and those whom local people had suggested avoiding. In many cases, these people proved to have strong viewpoints and provided alternative ways of viewing the cultural and environmental landscape.

During RRA, Hypothesis Confirmation bias (where data is taken to reinforce previously held views) could have had an impact upon the accuracy of opinions. However, the nature of the local culture and situation as a whole was unknown to the researcher prior to the pilot study phase and therefore there were very little preconceived ideas or hypotheses. Moreover, the researcher was particularly careful to try and keep an open mind during data collection, and to try to view the community from an emic perspective rather than taking a Western stance. In this instance, the collection of data suitable for a GIS aided the researcher since the object was to obtain factual data suitable for GIS analysis, rather than the gathering of data for an interpretation of the facts which a more anthropological context might have assumed.

As far as possible, nods and smiles were given as part of the introduction stage, or after every response to the survey, whatever was said. In this way, people could not get any indication of feeling that their responses were 'right' or 'wrong'.

7.2.4: Results of RRA

Interviews were classified into three categories:- those with local families living in the Park, those involved with Park management, and those involved with tourism within the Park. A number of themes were drawn from the responses to each.

Park management responses tended to relate to relationships between themselves and other administrative bodies, and their role in the social and economic facets of the community. Togtokhnyam (Governor of Hatgal), in particular refers to the social problems suffered by Hatgal that she does not see as being addressed by the National Park administration. There is a feeling that these aspects appear to be overwritten by the promotion of tourism in the region. This was supported by other sources who suggested that the National Park and Hatgal administrations tend to work independently of each other and that the National Park administration alludes to the feeling of being cut off from the rest of Mongolia. This is exacerbated by the lack of electricity during much of the year, unreliability of communications, and in some cases, separation from their families. A general feeling amongst administration personnel was that there did not seem to be a clear definition of ecotourism or understanding of the implications of ecotourism for the area.

Local people focused mainly upon their relationships with the environment and their changing work role, with the potential of tourism in the region. Most local people are only too happy to extend their hospitality to tourists - providing that the benefits tourists bring are distributed fairly amongst them. Families usually move four times in a year, with each season. They travel to Hatgal fortnightly on average to buy rice, salt and medicines. Hard currency is gained from the sale of livestock. In winter, food is scarce and wild animals are hunted, primarily for supplementing food. The main threat to their livelihood is seen as the wolf.

However, local people have a high regard for "saving the nature" (Humphrey *et al.*, 1993 and Infield, 1988) but are not sure exactly how to go about this as there is a feeling of lack of environmental and tourism information upon which to base their decisions. They perceive the National Park administration as rule enforcers but in general have a positive outlook for their lives and the future of the Park.

Tourist companies have a very positive view of the future, are estimating a large increase in tourist numbers to their camps in the coming years, and are constructing new complexes for this. There are two types of tourist, the first stay in camps in the region for on average 4-5 days. The second type are independent travellers who stay a longer period on average, have no fixed plans and who are difficult to track and monitor. The camps themselves do not supply "approved" guides, and there is no monitored guide training or registration system in the Park. The camp administration have a tendency to bypass the Park administration, and take queries directly to Ulaanbaatar. This increases the feelings of marginalisation experienced by National Park staff.

From the first phase of fieldwork, some conclusions can be reached about the potential of data collection, accuracy and integration into a digital database. Environmental data exists mainly as maps and charts (State Committee CCCP, 1989) drawn up by Russian cartographers. These are of a precise nature, but their accuracy is unknown. Other data are lodged in the reports of over 20 years of Russian/Mongolian expeditions to the region - typically ungeoreferenced, and again of unknown accuracy. These data could conceivably be digitised and used as a basis for the GIS database - subject to the production of a basemap from 'best accuracy' sources.

Cultural and community data exists to a very limited extent in the Khövsgöl atlas (State Committee CCCP, 1989), but there is no source of data in the detail required, and so for the purposes of the GIS this data would have to be collected and georeferenced using a GPS.

Although tourism is becoming increasingly important to Khövsgöl, regulation of this development follows behind and is a response to development rather than creating the environment for it. Part of this results in little or no centralised data about the status of tourism in the region.

There are several potential methods for collating this information. Firstly the tourist companies themselves could be asked to provide statistics; secondly, the National Park administration could gather statistics (for example, from the number of visas issued, and registrations with the police). Finally, a survey could be directed at a sample of tourists to give an estimate of trends.

However, tourist companies pay tax in relation to the amount of profit they make. It is not in their interests to divulge precise numbers of tourists to their camps. As previously described, regulation of tourism in the region is sketchy. The National Park authorities do not have this information currently, which is a direct impediment to the construction of appropriate regulation. A survey of tourists to the region would be constrained by language and distribution problems, but for the purposes of this research, was considered a viable option, and the subject of the second phase of fieldwork.

7.2.5: Interpretation of Results

It is estimated that approximately 8000 questions were asked of 134 families. A maximum of 13 interviews took place in one day in Horoh where a very large number of families are concentrated between the Dolon nature reserve and Hankh community centre. A number of responses stood out, as there seemed to be strong feelings about them. Questions 1 and 48 dealt with relationships with water and the environment. It was found that few families utilise the lake as a water resource, and instead congregate around rivers. On being asked about their attitudes towards pollution, many people felt that it was impossible to pollute the rivers, or that they could do nothing to either prevent, or clean pollution. Those that had a more proactive approach said that they would do everything in their power to prevent pollution, but should it occur they would like to clean it - either physically, or spiritually, with the help of a lama.

Some interesting trends of herding practices and lifestyle were also highlighted by responses to the survey. Most families make four movements per year, but the exact times and directions of these are determined by the weather patterns. Families living close to centres such as Hatgal and Hankh usually have only two movements per year, and overwinter in the centres. Only a few herders mentioned any difference in the way they herd different animals. Sometimes the smaller animals are herded at higher altitudes in winter, as the snow in the lower valleys is very deep and it would be difficult for them to find food.

The pasture around the lake is generally described as 'good' in the areas where it is utilised, but people feel they are suffering an increased burden from the threat of wild animals to their herds. Nearly all families felt their herds were under threat from wolves and thought that the number of wolves in the Park had been increasing in recent years because they are now protected animals, and no organised culling is taking place. However, many people still hunt, although this is apparently under-reported in their responses. The most common species mentioned for hunting were wolf, roe deer and wild boar. Certain plants were seen as being very important in the diet and in daily life. A list of around twenty medicinal plants was generated. These plants are generally recognised and are the subject of collection by local people. Additionally, certain species such as rhubarb are on the Park 'red list' of endangered species.

Although there was no provision in the survey to obtain information about migration of whole families, there was no evidence of large-scale migration of people out of the region from within families, other than the expected transitions due to marriage. There were also no reported changes in lifestyle among any of the 134 respondents since the designation of the area as a National Park. Some people in a remote region on the East side of the lake were unaware of the region's status as a National Park. One of the only ongoing changes that was noted by the researcher, was that many people are now preferring to live in a wooden cabin during the summer, in order to save their *gers* for the winter, as the summer climate (through UV radiation) damages them. This has become an issue in recent times due to the cost and scarcity of *ger* furniture and fixings. Moreover, wooden cabins tend to be cooler during the summer months, and *gers* warmer in winter.

Another issue that affects the community is the availability of medical attention. Many people report difficulty in getting to see a doctor - mainly due to the remoteness of their lifestyles, lack of transport other than livestock, and scarcity of fuel for ambulances. Medicines are often delayed or not available at the hospitals - transport between Khövsgöl and Ulaanbaatar is sporadic and unreliable. The majority of people do have health insurance and do not need to pay medical fees if they can get to the medical centre in Hatgal and always supposing that there is appropriate treatment and medicine available.

The problems resulting from lack of finances were one of the most recurring themes throughout the survey. Richer herders tended to say there is no unemployment, since everybody has their own herds (Section 7.2.6 Questions 29 and 30). Poorer herders (perhaps through lack of herding ability) blame the market economy for a lack of industry and jobs. Most people would like to start a small business trading in dairy products, leatherwork or sewing. Some families already supply each other, but see a potential market in the tourists who are coming to Khövsgöl. Hatgal is a very important retail centre for the local community (as it is the main supply route to the region from Ulaanbaatar via Mörön). Hankh is less important, as it has irregular supply, and an independent retailer works to supply the Horoh region. There is an acute awareness of the cost of goods - most people knew the exact number of *tugriks* for a litre of petrol.

The tourism industry has been envisaged as a sort of lifeline by many local people, who reported eagerly awaiting tourists who would exchange news and information, and trade with them. Most people were happy to meet tourists, but stressed the importance of tourists understanding local customs. Work within the community is seen as very important, and so the tourism industry is welcomed primarily as a potential workplace for many younger people who do not have jobs. There was only one region of the Park that was identified as a region where tourists should not approach. Burran Khaan Mountain to the North, on the border with Russia has religious connotations within the local community and there was a strong feeling of local opposition to tourists who might approach the mountain area without appropriate respect.

As a whole, people felt that they did not get any help from the National Park, nor could they think of ways in which the National Park might help them. Should there be a problem with some aspect of the Park, most families feel they would go first to their local governor, or a ranger whom they knew personally. Only one rich herder suggested he would contact Ulaanbaatar directly.

Interviews are presented in the form:

Description of individual	to satisfy anonymity requirements of interviews, names have been removed
Site of Interview	whereabouts in Khövsgöl?
Date	
People Present	was the interviewee alone, or were others present who might affect the results?
Job Description	in what context is this individual being interviewed?

As regards Chapter 6 (methodology), semi-structured interviews were undertaken on an informal basis, whereby a list of questions were kept in mind, but the conversation allowed to explore different avenues. In this way, a picture of society was quickly built up. Each interview usually began with a question from the list, and then continued upon lines defined by the interviewee. For example, after pleasantries had been exchanged, the interviewee might be asked about something socially 'not sensitive', and which was apparent within the household, for example, number of children, the host's activities, etc. Topics of conversation led on from that, often begun by information offered up by the host themselves. In this manner, the researcher was able to probe topics that added to the overall 'picture'. Care was taken to ensure that people of different backgrounds were selected.

7.2.5.1 Questions

A/O	Refers to whether the question is from the ***O**riginal* list, generated from the MacArthur Project questionnaire, or whether it is one of a number of ***A**dditional* questions, created after discussions with local people and National Park administration.
L/R/I/T	Refers to whether the question is targeted towards ***L**ocal* people, ***R**angers*, ***I**nstitutions* (such as the National Park Authorities), or ***T**ourists/tourism agencies*
C/R/H/V/T/N/O	Refers to the category to which this question is likely to follow on: either, ***C**ommunity*, ***R**eligion*, ***H**unting*, conser***V**ation*, ***T**ourism*, ***N**ational Park*, or ***O**ther*

Ref	*Question*	*A/O*	*L/R/I/T*	*C/R/H/V/T/N/O*
A1	What are your job responsibilities?	O	R/I/T	H/V/T/N
A2	Can you give me some demographic information for Hatgal?	O	I	C/T/N
A3	Do you have any problems with wild animals in this region?	A	L/R/T	C/H/V
A4	How many children do you have?	O	L	C
A5	Are there any places where tourists shouldn't go?	A	L/R/I/T	R/V/T/N
A6	Where do you move during the year?	O	L	C
A7	Why did you move from Hatgal?	A	L	C
A8	What things do you buy in Hatgal?	A	L	C
A9	Was there a monastery here in the past?	A	L	C/R
A10	How long have you lived here?	O	L/R	C/N
A11	How many tourists do you cater for?	O	I/T	T
A12	What are the main problems that face Khövsgöl National Park?	O	T	C/R/H/V/T/N/O

TABLE 7.1: Initial Questions for RRA Semi-Structured Interviews

The questions in Table 7.1 were used to begin a discussion, after the interviewee had asked who the interviewer was, and why she was there. Introductions were conducted upon different lines depending upon who was being interviewed. For example, to local people, it was important not to come across as an 'official' and therefore in some instances, in order to gain any conversation at all, the interviewer had to appear to be partly researcher and partly tourist. The view of the interviewer by the host often dictated the first question that was asked, to begin the conversation. After this, the interviewee offered information, which was then 'probed'.

Ref	*Question*	*A/O*
C1	What do you think of co-operatives or a small project fund?	A
C2	Co-operatives: what products could be made to sell?	A
C3	Who should run the co-operatives?	A
C4	Should a person collect the goods, or should the goods be taken to some central place?	A
C5	What are the main problems here?	O
C6	What is the state of communications in Hatgal?	O
C7	What is the state of environmental awareness in Hatgal?	O
C8	What is the state of electricity in Hatgal?	O
C9	Do you have any problems with wild animals?	A
C10	Where do you move during the year?	O
C11	How long have you lived in this region?	O
C12	Why don't you live in a *ger*?	A
C13	Are there ever any problems with other people using your land?	O
C14	Have there been many changes?	O
C15	Are there any fables or tales about the region?	O
C16	What livestock do you have?	O
C17	Which places do you think are particularly beautiful?	A
C18	What are the woman's main duties each day?	O
C19	What are the man's main duties each day?	O
C20	Do you have any traditional remedies for ill-health?	O
C21	Do you use the medical service or do you use herbal remedies?	O
C22	Where did you get married?	A
C23	How many children do you have?	O
C24	How many children would you like?	O
C25	What jobs would you like to see them doing?	O
C26	Do your children want to work in Hatgal or stay here?	A
C27	Why did you move from Hatgal?	A
C28	How often do you get to Hatgal and what good do you buy?	A
C29	Where do you get your fuel from?	O
C30	What happens to the rubbish that is produced?	O
C31	What taxes do you have to pay?	A
C32	Do you think they are a fair sum?	A
C33	How do you protect your animals?	A

TABLE 7.2: Questions About Aspects of Community

Ref	*Question*	*A/O*
R1	What is your religion?	A
R2	Was there a monastery here in the past?	A
R3	Is there a monastery in the region now?	A
R4	Have you ever seen any lamas?	A
R5	Who fulfils the monk's function now?	A

TABLE 7.3: Questions About Aspects of Religion

Ref	*Question*	*A/O*
H1	Is there any hunting in this area?	O
H2	Who is hunting?	O
H3	Which animals are being hunted?	O
H4	Do you hunt?	O
H5	Which animals do you hunt?	O
H6	Why is the number of wolves increasing?	A
H7	What has happened?	A
H8	Is there a problem with hunting in the National Park?	O
H9	Does anyone hunt bear/ibex around here?	A
H10	Are there any restrictions on hunting?	O
H11	Are people able to hunt in this region?	O

TABLE 7.4: Questions About Aspects of Hunting

Ref	*Question*	*O/A*
V1	Craig and Martin are not finding animals. It is difficult to market ecotourism if there are no animals.	A
V2	Do you have any ideas on protection?	A
V3	Are there any Protected Areas?	A

TABLE 7.5: Questions About Aspects of Conservation

Ref	*Question*	*O/A*
T1	Are there any problems with Ecotourism?	O
T2	Are the tourist impacts here good or bad?	O
T3	Do you think that more tourists in the region will make your job any more difficult?	A
T4	Do you see many tourists here?	O
T5	Do you supply food to tourists?	A
T6	Are there any places where tourists shouldn't go?	A
T7	Are the tourist camps good or bad?	A
T8	Do you meet many foreigners here?	A
T9	Are you happy to meet foreigners?	A
T10	Is it a problem if tourists do not know all your customs?	A
T11	Would you be interested in showing tourists where wildlife is?	A
T12	How many tourists do you cater for?	O
T13	Which foreign companies send tourists to your camps?	A
T14	Do you expect the same number of people next year?	A

T15	What is the average length of stay?	O
T16	What activities can tourists take part in?	O
T17	When is your tourist season?	O
T18	What is the distribution of Mongolian visitors?	A
T19	How many tourists do you expect next year?	A
T20	What permits do you need to be able to put a tourist camp in Khövsgöl?	A

TABLE 7.6: Questions About Aspects of Tourism

Ref	*Question*	*O/A*
N1	Should we make Hatgal the tourist focus for the National Park?	A
N2	Should Hatgal be outside the National Park?	A
N3	Do you see any National Park rangers?	A
N4	Do you need more rangers?	A
N5	In which regions?	A
N6	How big is the territory that you cover in your job as a ranger?	A
N7	Do you have to submit any reports to the NP about your territory?	A
N8	Do rangers ever visit you?	A
N9	Has the National Park made any changes to your lifestyle?	O
N10	What changes have occurred in the region since its designation as a National Park?	O
N11	What do the National Park administration do in the area?	A
N12	How do you feel about the National Park?	O
N13	Should the National Park rangers help protect you from wolves?	A
N14	How do the National Park rangers help you?	A
N15	Do you have a positive or negative view of the National Park?	O
N16	What does Daschiirev do?	A
N17	How can the National Park help you?	A
N18	How do you feel about the National Park?	O
N19	If you had a problem with something to do with the National Park, where would you go?	A
N20	Would Daschiirev help?	A

TABLE 7.7: Questions About Aspects of the National Park

Ref	*Question*	*O/A*
O1	What are your views on Helicopters in the National Park?	A
O2	What happened to the foreigners?	A
O3	What penalty should they have paid?	A
O4	What are your main job responsibilities?	O
O5	After being in the area, what do you feel are the main problems that stand in the way of sustainable development?	A

TABLE 7.8: Other Questions

Name	*Context*
Lindsay Fielding	Interviewer
Chimgay	Interpreter
Stanley Stewart	Journalist
Maggie Holmes	Radio Journalist
Jargal	Interpreter
Philippa	Discovery Expeditions staff
Byra	Groom
Christine	Discovery Expeditions participant
Jill	Discovery Expeditions participant

TABLE 7.9: Roles of People Present at Interviews

7.2.5.2 Interviews
a: Management

Description of Individual		**Representative of the National Park**
Site of Interview		**Khövsgöl National Park Headquarters - Hatgal**
Date		**22/07/95**
Present		**Lindsay, Chimgay**
Context	**95A**	This man is the ecotourism co-ordinator for Khövsgöl National Park. This is a new position

A1 *What are your main responsibilities?*

He chooses something he is interested in to do with tourism and follows it. He does not know of his job description. He feels his fields of influence include Law, regulations, and foreigners.

T1 *Are there any problems with Ecotourism?*

a) Many tourists and companies are building here at the edge of the lake.
b) Many people are building their own tourist centres.
c) He should look after people carefully in order to save the environment and nature.
d) He should look after the environment for the future.

[At this point he volunteers some environmental information]

Garbage and dirty water has to be placed 200m away from the lake. His priority is to 'save nature'. 95L[2] has had to build a second camp in order to put in a shower, because it was previously too close to the lake. He says there have been new laws from April 1st 1995, concerning hunting, air, water, plants, etc. His main job function is to help construct the road and manage people.

N1 *Should we make Hatgal the tourist focus for the National Park?*

He agrees with this opinion, but lacks the money.

N2 *Should Hatgal be outside the National Park?*

Yes this is a good idea. The local people have a small garden and the district tried to grow potatoes this year. The spring has not been good as it has been windy and rainless.

C1 *What do you think of Co-operative or a /small project fund?*

[The interviewee chose not to answer or discuss this question]

O1 *What are your views on Helicopters in the National Park?*

There was a small airstrip, but this is inside the National Park. He agrees there should be no helicopters north of 95L's camp. He would like to see a helipad in Hatgal, just behind the National Park Head Quarters, where there is a suitable strip of flat land.

H8 *Is there a problem with hunting in the National Park?*

Hunting was prohibited two years ago.

H2 *Who is hunting?*

Tsaatan and Russian people.

H3 *Which animals are being hunted?*

Fishing[3]

V1 *Craig and Martin are not finding animals. Difficult to market ecotourism if there are no animals.*

They are looking for red book animals[4] which are rare anyway.

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[2] Owner of the Toilgot Tourist Camp on the west coast of the lake.
[3] This is a common answer, as fish are the main animals considered in the Park, and fishing is commonly seen as hunting.

V2 *Do you have any ideas on protection?*

A few years ago, there was only one chapter in the law on nature. Now there are more regulations.

N4 *Do you need more rangers?*
N5 *In which regions?*

There are 3 regions to save, SPA's (Special Protected Areas), wild areas, and tourist regions in that order. Rangers concentrate in the SPA's. He does not know how many rangers there are in the Park.

Description of Individual		**Student**
Site of Interview		**Hatgal**
Date		**27/07/95**
Present		**Lindsay, Chimgay**
Context	**95B**	This student is studying in Germany, looking at the socio-economic problems following the decline of communism

A1 *What are your job responsibilities?*

This student is studying the decline in industry, the reasons behind it and the subsequent social structure changes. She is most interested in how the population and standard of living has reduced, and the changes in the agricultural infrastructure. She estimates that about 57 percent of adults in Hatgal *sum* have returned to an agricultural existence from industrial jobs. She has figures showing Hatgal is comprised mainly of older people. She is considering the relationships between trade, money and goods to try and evaluate which ways would be the best to improve the economy in Hatgal.

She sees the major complication to the growth of industry in this area as the emphasis placed on conservation issues, which preclude any large industries from locating so close to the lake. What the economy needs is a capital

[4] 'Red Book' animals are those listed in the endangered species list

injection to form small projects which then sell goods to Ulaanbaatar and Mörön.

C2 *Co-operatives, what products could be made to sell?*

Clothes and sewn products, boots and leatherwork. Her father makes saddles and there is always a need for them.

T2 *Are the tourist impacts here good or bad?*

Tourists are here because of the nature and culture. She thinks there are likely to be only a few of them if they are just coming to see the nature. She does not regard this as a holiday. [She sees all tourists as mass tourists, and doesn't consider those with special interests to be as prevalent. I suggest 95L has seen an increase in tourism.]

C5 *What are the main problems here?*

a) Local people don't want vegetables. They need flour, rice etc. first
b) A great problem is the lack of goods in the shops. *No goods or no money?* No money is the main problem.
c) Another problem is that tourist income is not getting to the local people. She agrees with the proposition that legislation should require a percentage of goods to be bought from local people and Hatgal by the tourist companies.

Description of Individual		**Governor of Hatgal**
Site of Interview		**Hatgal**
Date		**29/07/95**
Present	**95C**	**Lindsay, Chimgay**
Context		Governor of Hatgal *sum* between 1995 and 1996

A2 *Can you give me some demographic information for Hatgal?*

Figures for 1994 include:

a) 15% of the population have a job.

b) 700 people have pensions.

c) Old people account for 25% of the population

d) Children account for 50% or more of the population

e) There were 30 births in Hatgal in 1994

f) Average life expectancy is 61(m) and 67(f)

People are having fewer children. She says this is mainly due to having less money available, and the freedom of contraceptives.

The death rate in 1994 was 90, (this figure includes infant mortality). This year the figure is greater than in previous years, because a large number of old people have died due to the conditions in the winter months. Their main problem is the amount of food available in winter

Of the 15 percent population who have jobs, 70 percent of these are women and 30 percent men. The jobs offered at the tourism companies are mainly cooking and cleaning which are seen as the woman's traditional roles.

If men have no job, then they concentrate on their herds. This is also seen as a viable job. However it is mainly subsistence and does not produce a large amount of income. If they do not have a herd, then they rely on the salary of the woman.

In 1994, 70 percent of the population was poor where poor is defined as having < 1,960 Tg (countryside) or < 2,300Tg (towns) per month per head of the family. In 1995 this figure has risen to 80 percent.

Mongolian women have a hard life. Job creation may mean that women have 2 jobs, where the men have none, since men will not take over any of the women's 'traditional' roles or tasks. Jobs that are created for men in mind may help to cure some of the drinking problems of the society. If men have a job outside the home, then women take care of the home as their job. She thinks there may be a good market for part-time jobs for women.

C6 *What is the state of communications in Hatgal?*

People mainly hitchhike to travel, as there is no bus service. People travel separately to Mörön or Ulaanbaatar to buy food as required for their personal or retail needs. There is no central store for flour or other foodstuffs. There is a telephone line operating 24 hours to Ulaanbaatar and therefore to the whole of Mongolia, however, the electricity is usually off, and so communications are difficult.

C7 *What is the state of environmental awareness in Hatgal?*

She thinks there is a need for environmental awareness education for local people. The people are aware of the importance of the environment, but are not sure how to go about protecting it. As an example: the National Park prevents people from cutting trees, but many local people are unsure why this is a problem, why they should not cut the trees, or how they should not pollute the lake. The first stage is to have a meeting for the Hatgal and countryside people. It is best to have a colour handout showing how and why certain environmental practices should take place and give demonstrations at the meeting.

C8 *What is the state of electricity in Hatgal?*

There is a petrol generator for the whole of Hatgal. In winter this runs for 3-4 hours a day. Now there is no petrol, so there is no electricity. A HEP station is planned for near the bridge south of Hatgal. If permafrost is found to be a problem, the HEP will be moved a few km downstream. It will produce enough electricity to serve Hatgal and Mörön.

In 10 years, the water of the lake is expected to rise by about 2m (natural increase). With the HEP, the water will rise only 65cm instead (according to scientists at the Ministry of Nature and Environment). HEP Mongolia would like to begin construction next year. It will take 2 years to build. Electricity is usually sold at 67Tg/kWh, whereas HEP Mongolia would sell it at 40Tg/kWh.

b: Local People

Description of Individual	**Ranger**
Site of Interview	***Ger*, East side of the lake**
Date	**27/07/95**
Present **95D**	**Lindsay, Chimgay, Stanley Stewart, Maggie Holmes, Jargal**
Context	Park Ranger interviewed at his home

(Interviewer comments - 3 children present (nieces and friends). Horses, goats, sheep and cows [40 in total] This is a 5.5 section *ger* [5])

A10 *How long have you lived here?*

The ranger and his wife live in a beautiful *ger* and are newly married and separated from their parents. Their parents bought and furnished the *ger*. The young children present are part of the extended family, and help in the

[5] This is about an average size and is a good indication of wealth of the family.

household chores by following the grazing sheep - returning in the evening. Nieces and nephews help with the other animals and with wood collecting.

O4 *What are your main job responsibilities?*

He is the ranger for this area of the National Park.

C9 *Do you have any problems with wild animals?*

Fishing

N6 *How big is the area/territory that you cover in your job as a ranger?*

50km long to the North and following the National Park boundaries. Batjargal is in the mountains for 1-2 months away from his family.

C10 *Where do you move during the year?*

They spend summers in this place and move 10km North in the winter, near to where Tömörsükh lives. They move to the same places each year and moves 4 times, following the grazing during each season. Each place is then able to rest for 3 seasons.

C24 *How many children would you like?*
C25 *What jobs would you like to see them doing?*

He was married 1 year ago. He would like one of his children to be a shepherd, but otherwise has no preferences for numbers of children or their jobs. He has no objections to his children being involved in the tourism industry [6].

C22 *Where did you get married?*

They had the wedding nearby Tömörsükh's home because his ranger job prevented him from getting to his parents in Renchinlumbe. He met his wife when they were children, when their flocks got mixed!

T3 *Do you think that more tourists in the region will make your job any more difficult?*

He doesn't think that tourists - or more tourists - will cause any problems, or will be any more difficult. There are 10+ rangers are employed around the National Park.

N7 *Do you have to submit any reports to the National Park about your territory?*

He writes monthly records about the animals and botany of his territory and gives them to Daschiirev.

Description of Individual		**Middle-aged Woman**
Site of Interview		***Ger*, East side of the lake**
Date		**27/07/95**
Present	**95E**	**Lindsay, Chimgay, Philippa, Byra**
Context		

(Interviewer comments: Woman in her 40's. 6 people present (all younger), 20 cows, 20 sheep, 10 horses. Other *gers* in the vicinity belong to the same family.)

C23 *How many children do you have?*

She has 10 children. The older ones are married and she has 4 grandchildren.

C10 *Where do you move during the year?*

[6] Jargal adds here that it is considered unlucky to ask questions about what children will become or how many are wanted.

All the family moves together. In the winter she migrates towards Chandman-Öndör district, 10km away. They migrate 4 times per year and always come back to this place. She has lived here for 4 summers. She uses about 10km of grazing. The family goes with the animals in the morning and comes back at night. They visit the horses only to milk the mares.

C28 *How often do you get to Hatgal and what goods do you buy?*

She buys rice, bread, flour, salt and medicines. She sometimes goes twice a month either hitchhiking or by horse. She buys the material for clothing in Hatgal and makes it at home.

C12 *Why don't you live in a ger?*

In the winter they live in a *ger*, so in the summer they live in permanent log dwellings to keep the *gers* nice and make them last longer. *Gers* deteriorate due to the wind and the sun.

C13 *Are there ever any problems with other people using your land?*

Local people know which pasture is which and so, fences are not required. People do not own the land anyway. A newcomer would ask the local people about which land to use.

C9 *Do you have any problems with wild animals?*
H4 *Do you hunt?*

They catch fish in the lake sometimes with a fork [i.e. lots of fish to be had!]. Wild animals are a problem. The wolf is the main threat to sheep and horses, but having a watchdog helps. Hunting [Byra answers] Wolf, fox and marmot are hunted. Marmot is eaten. It is hunted by dancing hunters wearing a special white cloak looking like a rabbit. They make a 'laughing' noise when they see the marmot. If the marmot does not reply to this sound, he is ill and so is not killed.

N9 *Has the National Park made any changes to your lifestyle?*

There is no difference, but she thinks that perhaps the National Park administration will move her from the land.

N8 *Do rangers ever visit you?*

Yes, they tell the rules of the National Park. She is not allowed to hunt deer or bear, or she will be fined.

N9 *Has the National Park made any changes to your lifestyle?*

There have been no changes yet.

N15 *Do you have a positive or negative view of the National Park?*

It was said that they would build a fishery here to bring in work and money, but this has not happened yet. They have been told they can't cut trees, they can only bring wood that is already cut or has fallen down.

T4 *Do you see many tourists here?*

There are many tourists in summer.

T5 *Do you supply food to tourists?*

They sometimes visit - so this is only through hospitality. She is happy to see tourists. They have come to see the nature so this is a good reason.

C26 *Do your children want to work in Hatgal or stay here?*

They want to go, but getting jobs is difficult. Some of them go to school in Hatgal. Others don't go to school and are herdsmen.

Description of Individual	**Old Woman**
Site of Interview	***Ger*, West side of the lake**
Date	**27/07/95**
Present **95F**	**Lindsay, Chimgay, Byra**
Context	

(Interviewer comments: 7 people in the *ger*. 1 elderly woman, 1 man, 2 women, 3 children [ages between 1 and 12] Conversation is with all adults.)

T6 *Are there any places where tourists shouldn't go?*

Yes, the *gers* in the hills between the road and the east side of the lake.[7] Also, the *gers* by the children's camp (a person died there). It is dangerous, there are beliefs that bad things happen there.

C11 *How long have you lived in this region*
C14 *Have there been many changes?*

She has lived in Hatgal and surrounding region all her life, and is 82 years old. She has 1 child, 8 grandchildren and 17 great grandchildren. There have not been many changes in the region apart from the number of people drowning in the lake increasing.

C15 *Are there any fables or tales about the region?*

It is said that there are 99 small rivers draining into the lake, and that if there were 100, then it would be an ocean.

She relates the tale of the 83 year old woman in Hatgal called Doulamsuren who, when young one day, saw a big black dog run out of the lake and come to her *ger*. It ran around it 3 times and then went back.

[7] 50°.27.07N, 100°.13.15E

One day, the waves of the lake gave up a gold bowl. The people keep a fire burning in the centre of the bowl [8], also, a copper bowl has been found.[9]

N10 *What changes have occurred in the region since its designation as a National Park?*

The industry stopped after the region became a National Park. After the Russians left. They make a comment that the people need jobs. These jobs would be fine if they were tourism jobs, but only if the tourists brought cash to the region, if they saw no benefit from tourism then they would become angry. They give an example of the workers of Janghai - all are from Mörön, they are not local people.

Description of Individual		**Older Woman**
Site of Interview		***Ger*, East side of the lake**
Date		**27/07/95**
Present	**95G**	**Lindsay, Chimgay, Byra**
Context		

(Interviewer comments: 1 woman in 50's, 1 male in 20's, 2 children. Two foreigners came from England and helped them prepare for winter last year. She is looking forward to seeing them again. They spoke Mongolian. She is happy to see us.)

A6 *Where do you move during the year?*

3 people live in this *ger*. They move more than 10km North in winter, and move 4 times in the year. She had 16 children [3 died] (10 boys and 3 girls). The oldest is 40 and the youngest 20. She has 20 grandchildren. Her children have moved to UB, Erdenet, Bayanor etc. Some are herdsmen, and others have jobs in cities.

[8] This may be a reference to a Buddhist shrine.

N3 *Do you see any National Park rangers?*

Yes, they say she should not cut the trees or cause pollution. They don't help her at all. She is told she cannot hunt or fish within certain periods. She would like to hunt marmot, fish, but not bear or ibex [too difficult/big].

C9 *Do you have any problems with wild animals?*

There are wolves in the region. A person follows the herd to the pasture and shouts if a wolf is seen. In winter they carry guns.

H6 *Why is the number of wolves increasing?*
H7 *What has happened?*

There was one good year and so many were born. There is no organisation to hunt wolves and no law on wolf hunting. The meat is beneficial to health, so they hunt them, not the rangers.

N11 *What do the National Park administration do in the area?*

They should help to hunt wolf. Daschiirev does nothing. Tömörsükh is the most important person for the National Park, also Byra [Byra is present at this point].

T7 *Are the Tourist camps good or bad?*

Don't know - may pollute nature, but has no real contact with them.

N18 *How do you feel about the National Park?*

The National Park is just beginning so there are problems with its structure, but she has a positive outlook that things will get better. *How soon?* Don't know - due to lack of information.

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[9] *Arkhi* (vodka from yoghurt or milk) is traditionally drunk from a copper bowl.

Description of Individual		**Middle-aged Woman**
Site of Interview		**2 km North of Hatgal**
Date		**27/07/95**
Present	**95H**	**Lindsay, Chimgay**
Context		

(Interviewer comments: 42 year old woman. Has husband and 7 children [1 girl, 6 boys]. One child is married [25] and she has 2 grandchildren. Spends spring, summer and autumn in this place. Winters in Hatgal. Herds go with them. Has 2 horses, 10 cows, 5 sheep and 5 goats. She has been in this place for 3 summers.)

A7 *Why did you move from Hatgal?*

Worked in Hatgal before, but the Trade Company closed so she lost her job.

C9 *Do you have a problem with wild animals?*
C33 *How do you protect your animals?*

Sometimes there are problems with wolves - especially for the horses and sheep. She has no guns. She sends people to follow the herd and they shout at the wolves.

N13 *Should the National Park Rangers help protect you from wolves?*

They sometimes visit.

N14 *How do the National Park rangers help you?*

They show her how to protect her animals, otherwise she does not know. She speaks of the need to save the lake from pollution

C28 *How often do you visit Hatgal and what goods do you buy?*

She buys flour, rice and salt etc. from Hatgal, and also collects her pension. She would like to buy clothes and materials for the *ger*, boots and shoes - but all her pension is spent on food.

N15 *Does you have a positive or negative view of the National Park?*
N16 *What does Daschiirev do?*

There have been many changes, people can't cut the trees or hunt. This is a good thing because it saves the nature. Daschiirev makes people pay fines and enforces regulations.

[at this point 95B arrives and asks more questions. I have a feeling that 95H regards me as an official and is answering all my questions in a way that she would like me to hear]

Description of Individual		**Hunter**
Site of Interview		***Ger*, South of Hatgal**
Date		**27/07/95**
Present	**95I**	**Lindsay, Chimgay**
Context		

(Interviewer's comments: Female 30's, Male 30's 1 child 7 years old. Have been in this place for 1 year. Lived in Hatgal before. Moved because they wanted to keep their herd. They were made redundant. The woman was a kindergarten teacher and the husband worked in the sawmill. It is more difficult to work here because they are far from Hatgal.)

A8 *What things do you buy in Hatgal?*

Flour, rice, clothes, tobacco.

C16 *What livestock do you have?*

10 horses, 10 cows no sheep. Horses for riding and for meat.

C9 *Do you have a problem with wild animals?*

Usually wolf. They protect by following the herd.

C10 *Where do you move during the year?*

In winter they go south to the mountains, and move near the river in summer. They move 4 times during the year, following the water.

T8 *Do you meet many foreigners here?*

I am the first foreigner to visit them this year. They did not have visitors in Hatgal.

T9 *Are you happy to meet foreigners?*
T10 *Is it a problem if tourists do not know all your customs?*

Yes if the foreigners know Mongolian or have an interpreter, otherwise they would think it rude. If people are foreign there is no problem if they make a mistake.

N15 *Do you have a positive or negative view or the National Park?*

There have not been any changes in their life, and do not consider the National Park a positive or negative influence. They comment that it is difficult to understand who is the manager and who is the ranger. They do not see rangers here. They think that the rangers are usually in their own homes!

N17 *How can the National Park help you?*

Can't help them.

At this point, the man asks Byra to help him as he is worried he is saying the wrong thing. Byra and Chimgay explain my interest in National Park affairs, and tell him that I am not an official or working for Daschiirev. He then agrees to talk to me about his hunting.

H5 *Which animals do you hunt?*

Pig, wolf and fish, musk deer. Not ibex, bear or large deer. For meat in winter.

T11 *Would you be interested in showing tourists where wildlife is?*

Interested in showing tourists, but it is difficult to get to animals and he is worried about the safety of tourists.

T6 *Are there places that tourists shouldn't go?*

a) Dangerous places
b) Places where there is only one tree on the mountain.

There is nothing really sacred.

C17 *Which places do you think are particularly beautiful?*

a) Opposite Hankh - called 7 mountains. They go into the lake and there are many animals there.
b) The Island - however, they are very angry since it was burnt by foreigners. It will take 50 years for the island to recover.[10]

O2 *What happened to the foreigners?*
O3 *What penalty should they have paid?*

They don't know what happened or who they were. The problem was because they were 'high' people.

C5 *What are the main problems here?*

[10] A few years ago, some Swiss scientists were doing some work on the island. They neglected to put out all their fires sufficiently and when they left by helicopter, the downdraught fanned the flames into a fire which decimated the whole island.

The pollution of the lake from industry. In some ways, social conditions are going down because of the Russians leaving. He would like it still to be Communist.

[This is a family at virtually subsistence level that does not really have enough livestock to sell. They would like to be involved in co-operatives.]

C3 *Who should run the co-operatives?*
C4 *Should the person collect goods, or should they be taken to a central place?*

They would choose a local person. They would rather the person collected, but it would be OK for them to take goods to a certain place - e.g. Hatgal.

C18 *What are the woman's main duties each day?*

She gets up around 6-7:00 am, lights the fire and milks the cows. This takes about 1 hr. She then boils the milk and makes yoghurt. Then the curd is cooked and *arkhi* made. This takes about 4 hours. She cleans the *ger* and does the washing. She goes for water and wood several times a day for small amounts and collects about 30-40 litres each time. She cooks supper and then milks the cows in the evening at 7:00. She boils the milk from this and then goes to bed.

C19 *What are the man's main duties each day?*

Gets up around 7-8:00 am. 'does nothing'. Sometimes visits friends or Hatgal. He looks after the herds but doesn't follow them, because there are not enough people in the family to do this. He collects them in the evening, and checks the horses every 2-3 days. He may go hunting for 2-3 days at a time.

H9 *Does anyone hunt bear/ibex around here?*

Not young people. Most bear hunters are already dead! Don't know about ibex. Ibex leather is very warm. The fats, oils and meat of ibex are valued - the fat is very good for burns. A long time ago there were some people who hunted but not now. Doesn't know about people coming in from outside the National Park. Doesn't know about the Tsaatan people [hasn't seen them anyway].

There used to be a zoo at Mörön. There were not many animals, but they saw a reindeer there. He thinks there were never any Snow Leopards in this region. They have heard of Almas but not here!

C20 *Do you have any traditional remedies for ill-health?*

Trollius (Orange Globeflower) - helps women when pregnant. The whole plant must be boiled and the water drunk. The infusion must be strong - i.e. several plants.[11]

Description of Individual		**Old Man**
Site of Interview		**West side of the lake**
Date		**10/07/95**
Present	**95J**	**Lindsay, Chimgay, Christine, Jill**
Context		

(Interviewer's comments: This man is 74 years old)

R2 *Was there a monastery here in the past?*
R3 *Is there a monastery in the region now?*

The nearest monastery is in Mörön there was never one at Hatgal[12]. He would like to go to it, but it is too far away.

[11] This seems to be a general tonic for several ills in the region

R4 *Have you ever seen any lamas?*

Yes, he has seen some, but most were destroyed after the revolution. Renchinlumbe had 11,000 monks and a large monastery, but they were all killed.

R5 *Who fulfils the monk's function now?*

Advice from older people with respect to weddings and holidays etc. Prayers are in the Tibetan language.

C21 *Do you use the medical service or herbal remedies?*

He uses his own herbal remedies to start with. The knowledge of the old lamas has been lost. They could summon rain etc. but now they mostly know only herbal remedies.

N10 *Have there been any changes since the region became a National Park?*

There has been no change. Standards of living are always going down. Money is difficult. He has no salary or pension. There is no money for clothes. Money stays with the companies.

N17 *How can the National Park help you?*

They can't help him, he needs flour and goods for the *ger*.

H1 *Is there any hunting here?*

The law says he must pay for wood and hunting. He sees hunting as stealing from the state.

[12] This is incorrect, the nearest monastery is in Renchinlumbe, about 2 days ride across the mountains to the west. Hatgal does not have a monastery because it was only a major industrial settlement when

[His main thought now is to go to heaven.]

Description of Individual		**Old Women**
Site of Interview		***Ger*, West side of the lake**
Date		**10/07/95**
Present	**95K**	**Lindsay, Chimgay, Christine, Jill**
Context		

(Interviewer's comments: 2 old women, 4 children)

C11 *How long have you lived in this region?*

They have spent 10 years in this place. They see lots of tourists who visit. One woman spent the night here last year. They have 30 animals.

N12 *How do you feel about the National Park?*

Doesn't help. It may help people elsewhere but not here.

R1 *What is your religion?*

They don't know about it - presumably not religious themselves.

c: Tourists and Tourism Companies

Description of Individual		**Manager**
Site of Interview		**Toilgot Tourist Camp**
Date		**30/06/95**
Present	**95L**	**Lindsay, Chimgay**
Context		Owner of a tourist camp for foreigners

A11 *How many tourists do you cater for?*

Tourists this year:- 1,000. His company has 5 camps which accept only foreigners.

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the Russians were in Mongolia.

T13 *Which foreign companies send tourists to your camps?*

a)	Pferd & Reiter	Germany
b)	Lernidee Reisen	Germany
c)	One World	Australia
d)	INGOL	Czechoslovakia
e)	Vermillion	USA
f)	Tiger Mountain	Switzerland
g)	Juulchin	Mongolia
h)	Shuzen	Mongolia
i)	Beluga Tours	Germany
j)	Explore	UK

T14 *Do you expect the same number of people next year?*

Had 50 people last year, and expects 60 people this year. Estimates 100 people next year. Cost is $35 per night. Is building more camps to take these people

T15 *What is the average length of stay?*

Average stay of 4-5 days, with spread of 1-50 days

T16 *What activities can tourists take part in?*

Activities include:- Hunting, Hiking, Fishing, Horseriding. Visit *gers* [just down the valley].

H10 *Are there any restrictions on Hunting?*

Have to get permits for hunting and fishing from UB, for Red deer and roe deer, not ibex. There is a limit to fishing of only one, these are mainly taken back as trophies. Hunting is only just beginning to be of commercial interest here, the rest is mainly food. $1,000 for a permit for foreigners. This is the same price for Mongolians.

C29 *Where do you get your fuel from?*
C30 *What happens to the rubbish that is produced?*

Garbage is sent to a rubbish tip inside the National Park. Fuel and food are brought from Hatgal and Mörön. He cuts trees from around the site.

C31 *What taxes do you have to pay?*
C32 *Do you think they are a fair sum?*

The licence for the camp is equivalent to 10 percent of his profits, which goes to the National Park. He thinks this is too much. An acceptable figure would be 2-3 percent. He doesn't know how the National Park spends the money. He also pays 45 percent tax.

N19 *If you had a problem with something to do with the National Park, where would you go?*

The Ministry of Nature and the Environment.

N20 *Would Daschiirev help?*

Yes he might help [but this is not his first choice]

V3 *Are there any Protected Areas?*

No - tourists can go anywhere

C9 *Do you have any problems with wild animals?*

There are no tourists in winter. He employs people from Mörön, and some locals to work in the camps.

T17 *When is your tourist season?*

The most important country for tourism is Germany, but over 40 countries are represented. The season begins in May and ends in October. He doesn't take lone tourists, they have to book through a tour company.

Description of Individual	**Manager**
Site of Interview	**Janghai Tourist Camp**
Date	**29/06/95**
Present **95M**	**Lindsay, Chimgay**
Context	Tourist Camp for Mongolians

A11 *How many tourists do you cater for?*

At the present time there are 40 Mongolians and 7-8 Foreigners. Over the last 20 days, 48 people will have been staying here. 1-2,000 people stay here each year.

T18 *What is the distribution of Mongolian visitors?*
T15 *What is the average length of stay?*

Mongolians from all over the country stay here. There is an average stay of 7 days. There are mainly short stays. Not many of 14-21 days

T19 *How many tourists do you expect next year?*

Thinks tourism will increase over the next few years. he predicts 25,000 people including travellers will come to the Khövsgöl area next year.

T20 *What permits do you need to be able to put a tourist camp in Khövsgöl?*

Permission to build a tourism camp comes from Ulaanbaatar and each year, 10 percent of the camp's profits is required to be paid to the National Park service. The camp was built for Mongolians and they are building new *gers* after 2nd July, each taking 15-20 people. He knows 10 percent of profits goes to the National Park service, but he doesn't know what it is spent on - only that there is a 10 year project with the NP.

N19 *If you had a problem with something to do with the National Park, where would you go?*

Ministry of Nature and Environment in Ulaanbaatar or the National Development Ministry. He talks also with Daschiirev [but again this seems to be secondary].

C9 *Do you have any problems with wild animals?*

No. Animals are protected.

H11 *Are people able to hunt in this region?*

Fishing permits are required. Daschiirev can give permission for foreigners, only a few animals per year are able to be hunted and permits cost a great deal of money. [He does not know which animals are able to be hunted exactly (gave examples of pig and fish) and specified not bear.] He thinks there is a problem with hunting.

Description of Individual	**Discovery Expedition Participants (phase 1)**
Site of Interview	**Ulaanbaatar**
Date	**03.08.95**
Present	**Lindsay, Craig, Martin.**
Context **95N**	Interview took place in Ulaanbaatar after one month in the field. What follows is the thoughts and discussion of a group of participants on their perceptions of the problems and potential solutions that Khövsgöl National Park faces.

Gender	Age	Motivations
Female	20s	Advert (money paid by her parents for finishing her degree)
Female	30s	Doctor. She wanted something unusual that she could link with her work.
Female	50s	Has been on Earthwatch trips before and wanted something similar.
Male	40s	Doctor. He had already practised medicine in Guyana, so wanted another similar experience.
Male	40s	Adventure and Science
Male	50s	Word of mouth. Previous experience with Discovery Expeditions.

A12 *What are the main problems that face Khövsgöl National Park?*

- Main problem is private enterprise. Tourist camps should be run by National Park staff. There should at least be an officer in each camp. Will the NP look after this?

- Local people are very worried about unaccompanied tourists. Accidents could happen and then there would be bad press for the area. Problems with unprepared tourists into environment / mountains.

- How might this be resolved? Establish a trail system with guides who check tourist equipment and allow overnight stays.

- Very little chance of seeing animals so can't advertise as wildlife experience. Birding has potential, but needs a guide to make the most of this.

- Areas could be assigned without guides to them so people do not have to be accompanied everywhere.

- There is a lack of private enterprise in the Park - but is it too late?

- There are two types of tourist :- those that stay in camps and those who go trekking.

- Gobi National Park does not have these problems because people find it more difficult to get into the core areas and tend to stay on the fringes.

- Hunting and habitation provide the most disturbance to wildlife. Could tourists actually make the hunter's life more difficult? Foreign naturalists are accompanying foreign groups at the moment rather than a local guide at the tourist camp.

- People are here in this region because not much is known about the place - it has been closed for 70 years etc.

- Can the UNDP help the National Park to build tourist camps?

- Tourist companies 'edit' the books so they don't make a profit, i.e. the 10 percent tax going to the National Park is a small amount. A bed tax would be better so the tourist companies have to maximise the profits for each bed. This would be more efficient.

- Small project fund is good, but benefits are not seen as coming from the National Park, only from the UNDP.

- The National Park is interested in generating a tourism economy for Khövsgöl. They don't know what their objectives are for the National Park. Change/Past/Present?

- The culture is such that public participation in decision-making is difficult to introduce or utilise.

- Region is subject to a land-lease scheme where agreements are made with the local people and the governor, i.e. an opportunity for face to face contact. New contracts every 5 years. Jim Wingard (UNDP) establishes these criteria.

- Reaction of National Park and tourists to extinction of species in the National Park?

- There is a requirement to show hard figures that sustainable tourism management is economically more viable.

- Have to decide objectives for the National Park, as the level and type of protection are related.

Independent tourists comprised approximately one fifth of the total tourist numbers in the Park, during 1995 (from Toilgot camp, and those independent tourists which passed the Discovery Expedition camp).

7.2.5.3 Analysis

Responses can generally be divided into three main categories, Management issues, Economy and Tourism. A strong theme emerged from the discussion around the provision of guiding facilities. Participants felt that there was little interpretation or supervision offered to visitors by the National Park. They suggested that some form of guiding system would be useful, at least one approved guide to each camp. Individual groups could then be free to explore the Park under the management of a National Park guide, who would be able to interpret the landscape, culture and ecology of the region. Additionally, a guide for each group would ensure that Park fees were paid appropriately, minimise environmental impacts through education of appropriate camping and waste disposal and allay fears about unaccompanied tourists getting lost or injured. Guides could be trained and certified by the

National Park and this would offer a measure of employment to local people, particularly males.

A second emerging theme was that of the management of tourist camps. Participants felt that there was very little control on private camps and any tourism funds coming into the are leaked straight out again. They felt that the National Park should have more of an interest in camps and were surprised that the National Park didn't own any. They felt that some new camps should be built, under the jurisdiction of the National Park and the private ones should be taxed more appropriately.

Currently, private camps pay 10 percent of their profits to the National Park, but this is easy to reduce, by accounting for profits in other ways. A more efficient mechanism would be to tax each bedspace, thus forcing the camp owners to increase their efficiency and maximise profits for each tourist. This would, of course, need to be backed up by new legislation. Participants felt that the UNDP might be able to play a role in aiding the National Park in these developments. Overall, they felt that a lack of clear objectives for Khövsgöl meant that development in any direction was constrained and since this was not communicated to local people, then they had little local support. Moreover, initiatives such as the 'Small Project Fund' introduced by the UNDP, were not seen as associated with the National Park in any way. The UNDP and the National Park need to work more closely on this, to relate benefits of the National Park to the lives of local people. In general, the lack or encouragement of private enterprise was what they saw as one of the greatest disservices to local people.

In terms of tourism, they felt that there were two distinct types of visitors coming to the region. Firstly, there were tourists that stayed in the camps while they were in the region. These might be defined as Organised Mass Tourists (Section 2.2.3). They stayed in camps such as Janghai and Toilgot and were associated with one of the specialist tour operators. The second group were identified as 'trekkers'. Visitors to the region who did not remain in the camps, but preferred to see more of the region. Usually, these were independent travellers. They were often unaware of the work of the Park and had managed to evade paying any Park fees.

7.2.6 Community Survey

What follows is a presentation of the results from the Community Survey (Section 7.2). Each question is defined, followed by a brief discussion.

Q1: What is the water source that you rely on?

Most people (73 percent) use a tributary. This is a **flowing** watersource that is able to filter some pollutants due to the levels of oxygen in the water. Conversely the lake (27 percent) would be more vulnerable as pollutants would be retained in anaerobic muds; biological pollutants would cause algal blooms around the perimeter of the lake.

Q2: How many times do you move during the year?

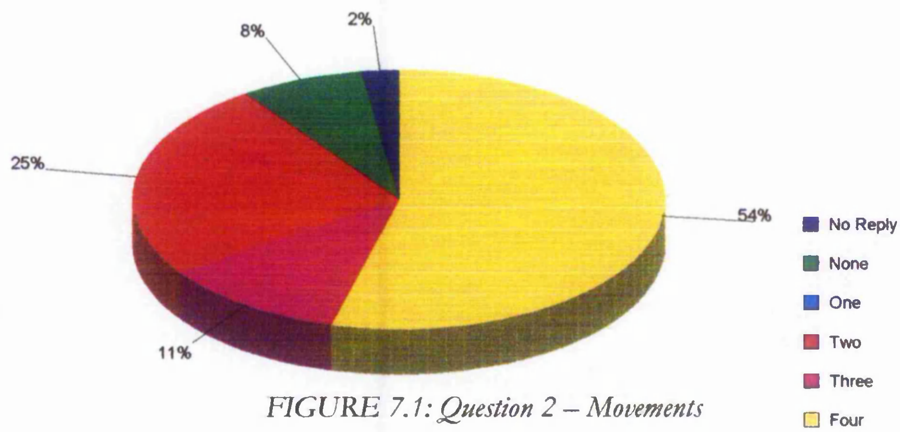

FIGURE 7.1: Question 2 – Movements

54 percent of people make four movements per year, tending to coincide with the changing of the seasons and the availability of vegetation for their herds. 25 percent make two movements per year, usually to and from their summer pastures. This indicates proximity to a local centre where they spend winter. A number of people, particularly around Horoh make no movements and have goods and services provided by travelling retailers.

Q3: By what means do you move during the year?

71 percent of people move using yak (the most common source of transportation) as people are self-sufficient. A truck or jeep (16 percent) needs a surplus of cash in order to purchase fuel and spare parts. 8 percent of people gave no reply as this question may have been not applicable due to them since they made no movements during the year.

Q4: Do you herd different animals in different places?

Animals are mainly herded together. Some herders herd smaller animals higher up because the depth of the snow is lower in winter than in the valleys. Larger animals are able to dig deeper for food. For these families, GIS could take note of topology as well as distance from *ger*.

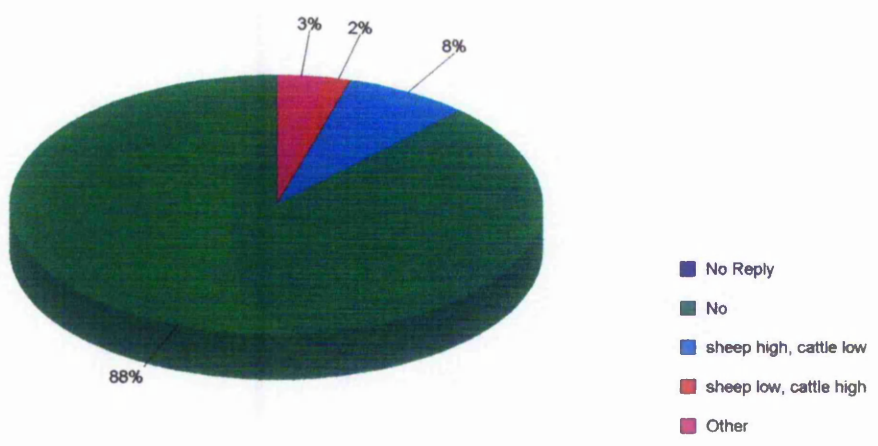

FIGURE 7.2: Question 4 - Herding

Q5: Are there any places where you would prefer not to herd, or don't want to go?

96 percent of people felt that there were no places that they wouldn't herd or go. There are no religious inferences from this, most people utilise all places in a

region. When people do say yes (4 percent), it is usually because of bad pasture etc. (Apart from Burran Khan, but this was not mentioned in this context).

Q6: Do you make any payment for use of land?

Many people confused land tax with income tax. Many (20 percent) said they did pay, but they actually meant payment of income tax for the number of animals they have. Additionally, most (77 percent) said they didn't pay, and also that they would not pay, as they felt they shouldn't. 2 percent didn't know.

Q7: Are there any tasks to do in your household, which cannot be done because there is not enough labour?

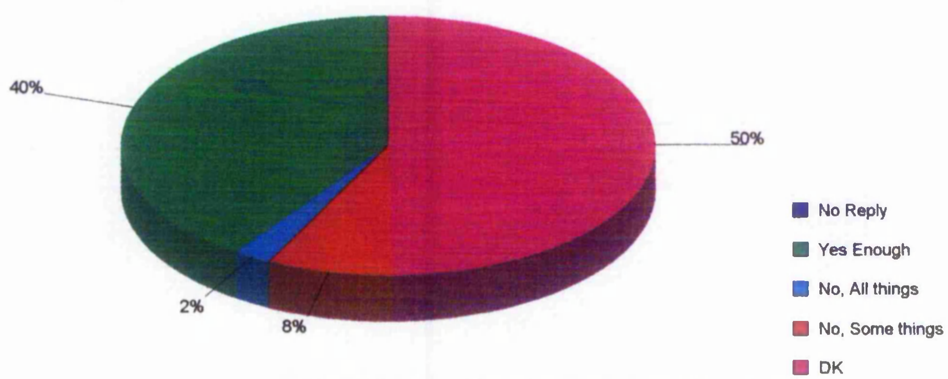

FIGURE 7.3: Question 7 - Household tasks

Not having enough labour is usually due to being a small family, or with no contacts with other families to help. Most families would not admit to having problems, unless the problems were self-evident to a visitor.

Q8: Do you ever cut grasses?

Everyone (100 percent) cuts grasses for feeding animals in winter. An area is usually fenced off to prevent it from being grazed. It is important that summer pastures are protected to some degree as well as winter, because summer grass is needed to supplement winter fodder.

Q9: What quality are the resources that your household uses?

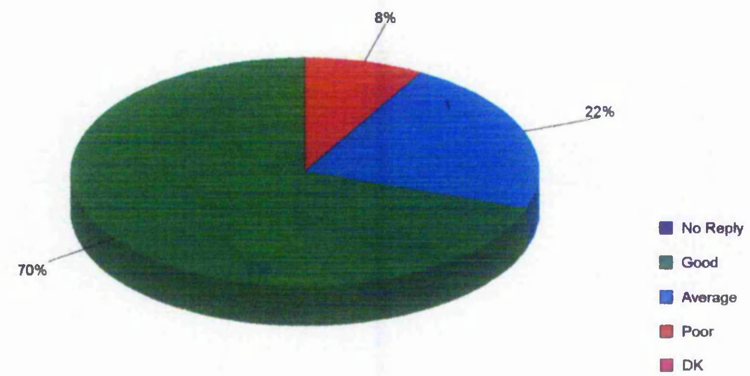

FIGURE 7.4: Question 9 - Resource Quality

This will be used for classifying land for grazing in the GIS, but poor land used for development would mean even more poverty for families. This also needs to take into account overgrazing and number of families in the area. It depends on how families view their land - i.e. they are the best judge of circumstances. It is mainly seen as good, but this is not surprising as families can choose where to move. It also depends on their status in the district. New families have to fit in.

Q10: Do you think your pasture is enough for your livestock?

Most people (87 percent) felt that they had enough pasture for their livestock (either enough good pasture, or a larger amount of poorer pasture). A GIS could plot people who thought that there was not enough pasture, and it would show any concentrations.

Q11: How do you protect your animals?

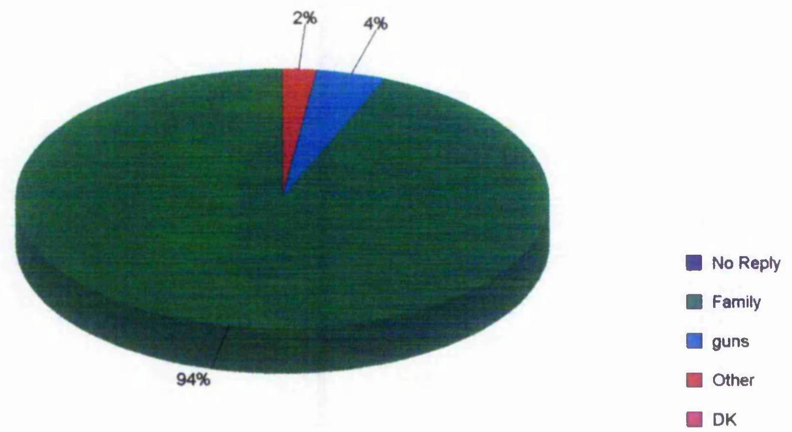

FIGURE 7.5: Question 11 - Animal Protection

Protection is mainly given by the family, herding and shouting. Guns are also used but the data obtained suggests a large underestimate of their use, as people won't admit to the use of guns for animal protection in case this infringes hunting regulations or payment of taxes.

Q12: Do you have a problem with wild animals?

This was also interpreted as a measure of herding ability. 44 percent felt that they didn't have a problem, 56 percent felt that it was a problem for them. It can be linked with the numbers of animals to see a correlation of wolves : concentration of animals. This data can be linked with a GIS to different areas which may identify particular animal habitats.

Q13: Do the National Park Rangers help you?

They help (13 percent) by mainly protecting against forest fires and personal help in not paying taxes for very poor families (this non-collection of income tax/wood tax seems to be at the ranger's discretion). Mainly, rangers are not seen to be of help to families in the National Park (87 percent).

Q15: Status of this herder

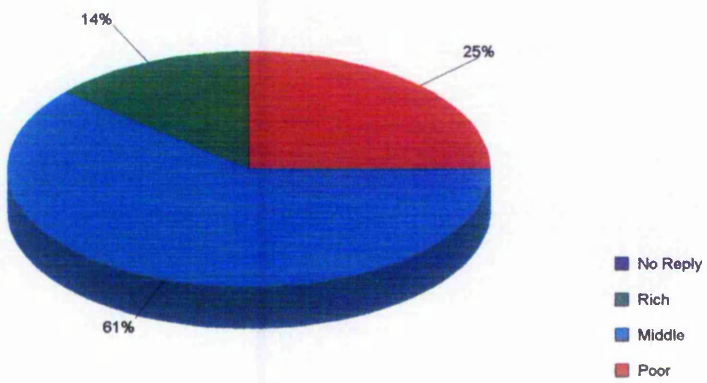

FIGURE 7.6: Question 15 - Herder Status

Affluence of a household was estimated in the following manner. If a household had an excess of livestock and was able to sell livestock to raise funds, or raise livestock for the purposes of recreation (for example racehorse breeders), then the household was considered 'rich'. A household which had a deficit of livestock or were at the edge of subsistence, was classified as 'poor'. 'Middle' households had enough livestock to support their family members and also enough excess to trade occasionally or support changes in family circumstances. Patterns of affluence could be modelled by a GIS across the area of the Park and examined over a number of years for change, perhaps in response to development of the region.

Q20: Who do the animals belong to?

Livestock tends to be privately-owned (98 percent) now that the economy is market-based and so state assets have been put into private hands. However there are some 'state' assets (2 percent), in this case animals/horses belonging to the National Park.

Q21: Breakdown of labour by major tasks: Men

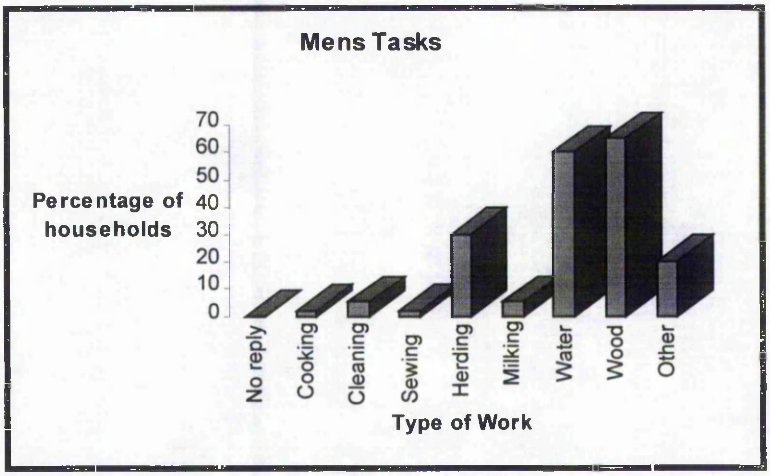

FIGURE 7.7: Question 21 - Men's Tasks

In general, men undertake water and wood collection, although in some households, all types of work were undertaken by the women and children. This left men free to visit their friends and go hunting.

Q22: Breakdown of labour by major tasks: Women

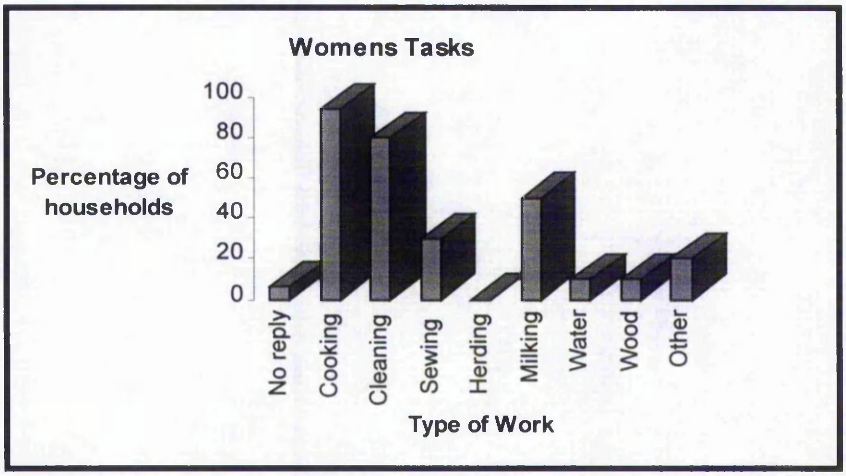

FIGURE 7.8: Question 22 - Women's Tasks

Women generally undertook tasks within the *ger* such as cooking and cleaning. They were also responsible for milking.

Q23: Breakdown of labour by major tasks: Children

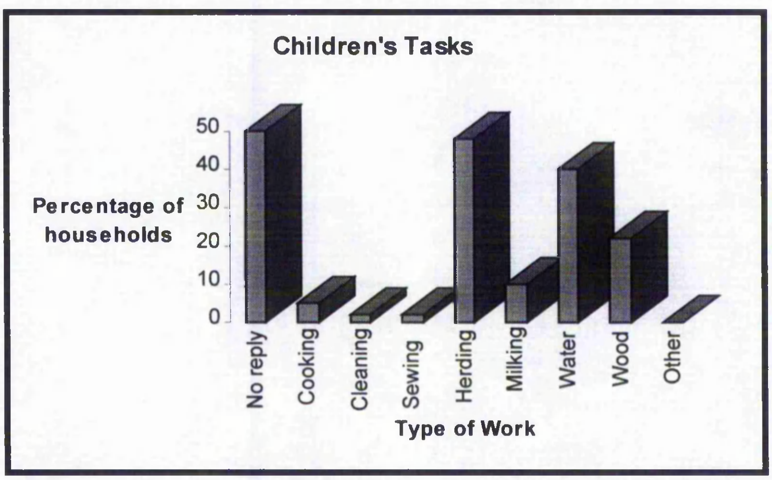

FIGURE 7.9: Question 23 - Children's Tasks

Only 50 percent of households replied to this question as many did not have children, or had adult children living in the *ger*. It would be useful to model patterns of work with a GIS to identify areas where there were households able to supply the specific types of labour required for a tourism development.

Q24: Would you like to start a small business?

Most (65 percent) would like to, but many replied no (35 percent) because they felt it was not possible or there was no market for their goods. Those who said yes would produce mainly dairy products and leatherwork.

Q26: [Women] Do you have your own funds that you can use as you wish?

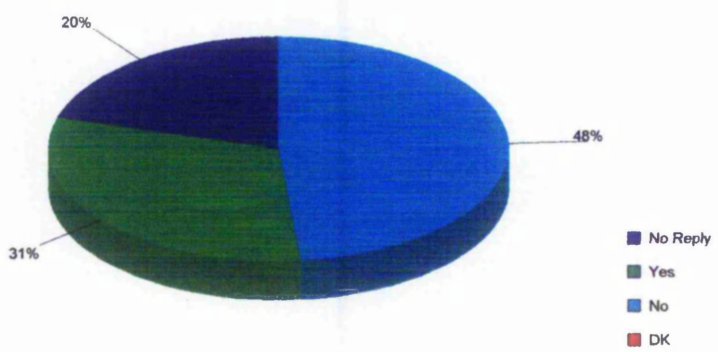

FIGURE 7.10: Question 26 - Do women have their own funds?

No replies includes those surveys given to male interviewees when there were no females around. It is the estimate of the availability of funds in the family. There is an underlying assumption that if women have money, then this means that a surplus available to the family.

Q27: Has anyone in your household moved to a different area?

21 percent is quite a high figure for the number of people who have left the region (within households). Therefore whole families are moving and relocating, rather

than just young men/women. 71 percent of households responded saying that no-one in their household had moved.

Q28: Why: [Q28 of Q27=(1)]

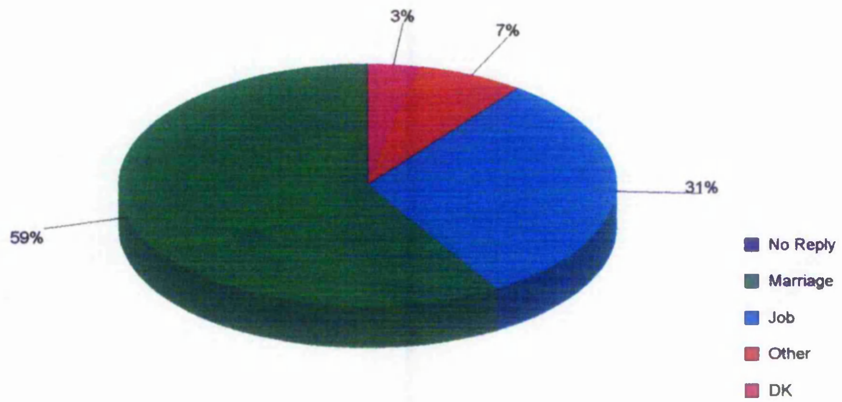

FIGURE 7.11: Question 28 - Why (re. Q27)

Of those who do move, it is mainly because of marriage. Jobs are also significant, e.g. becoming a soldier or studying. Jobs outside the family unit are usually because someone has higher education and, therefore, can look further afield for jobs.

Q29: Is there a problem of unemployment in your area?

79 percent of respondents felt that there was a problem of unemployment in their area. 17 percent felt that there was not a problem and 5 percent of respondents didn't know. A GIS would be able to model spatial patterns of unemployment to distinguish whether unemployment (or perception of unemployment) is more prevalent in one area compared with another.

Q30: Why?

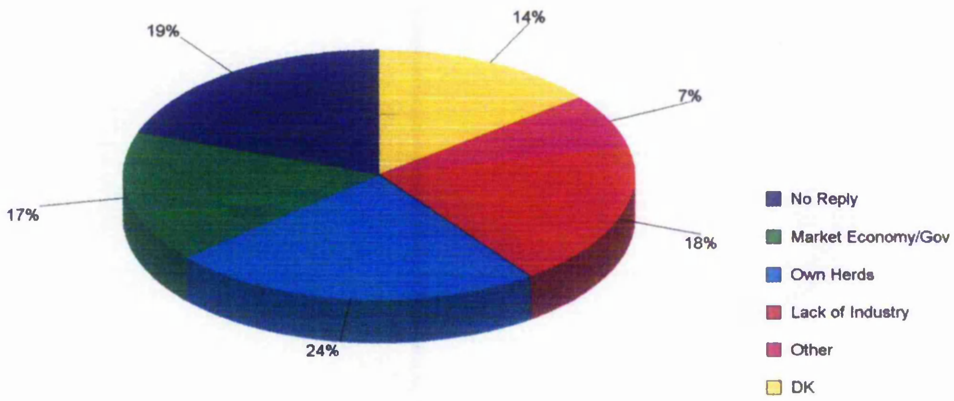

FIGURE 7.12: Question 30 - Why (re. Q29)

Many people have multiple answers here but mainly seem to think that if there is no unemployment, it is because everyone should have their own herds

Q31: Is it hard for you to see a doctor?

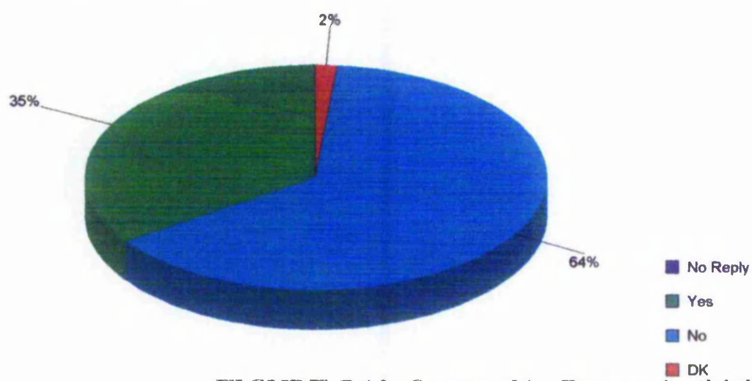

FIGURE 7.13: Question 31 - Doctors Availability

Many give distance as a problem (they may already have some infirmity). Most people are able to see a doctor, as a doctor may be present in the community group. No distinction is made between contemporary or traditional doctors.

Q32: Can you get the medicines you need?

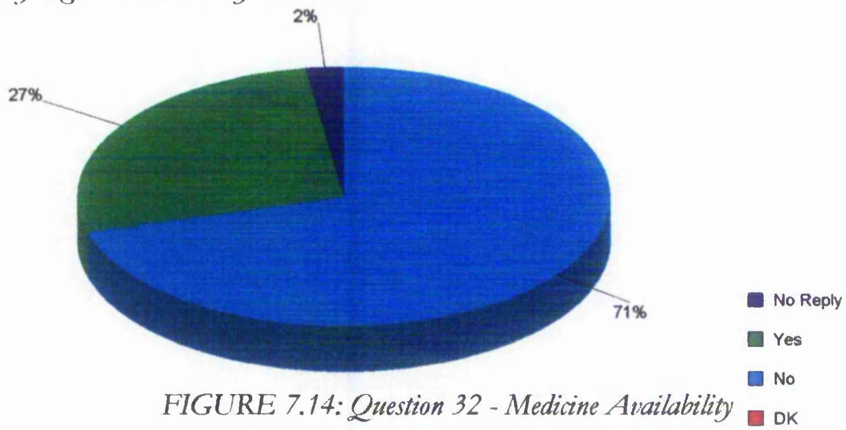

FIGURE 7.14: *Question 32 - Medicine Availability*

Some people don't know, because they've 'never been ill'. When people say yes, this might mean traditional medicines. Medicines for contemporary medicine are not available as there is a great demand and short supply.

Q33: Do you need to pay medical fees?

85 percent of people do not pay as they have medical insurance. Only a small number of people pay (11 percent) because they do not have medical insurance. There are also those who have never been ill and do not know about medical insurance – perhaps not knowing whether they have to pay (5 percent).

Q34: Would you prefer a traditional or contemporary doctor?

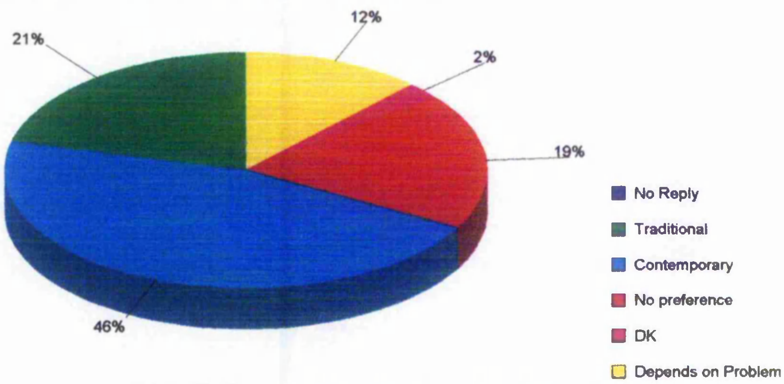

FIGURE 7.15: *Question 34 - Medical style type*

Most people prefer contemporary, but some have no preference, others have never seen a doctor, and some believe that it depends upon the problem (where large problems like broken bones etc. are treated by a traditional doctor). This also has implications for the benefits of tourism to be targeted appropriately.

Q35: Are there any products of your household economy that you produce only in order to sell?

Mainly the answer is no (82 percent), although some exchange and bartering may go on within family members which is not seen as selling (Sneath, 1993). Families are at subsistence level.

Q36: What are these? [Q35=(1)]

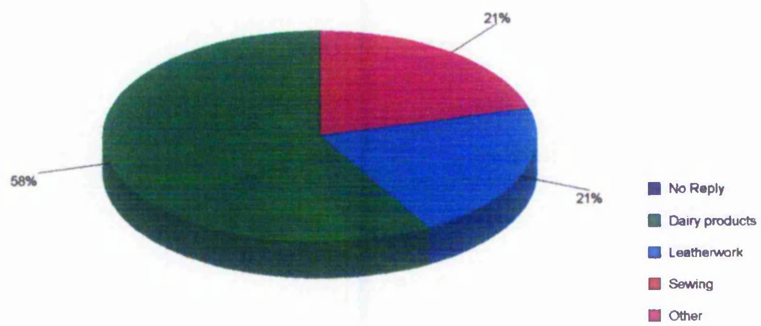

FIGURE 7.16: Question 36 - What are these (re. Q35)

Mainly dairy products are produced generally within the household, which explains their high significance, whereas leatherwork etc. are more skilled outputs.

Q37: How often do you get to the nearest commercial centre per month?

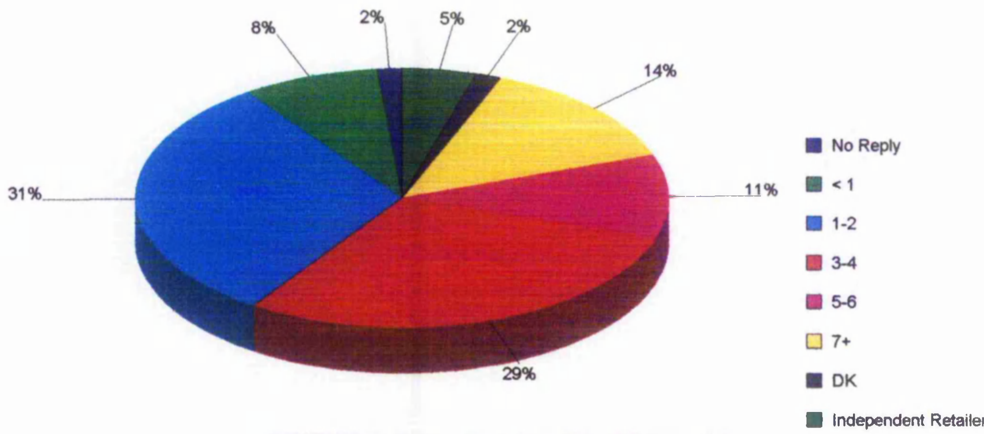

FIGURE 7.17: Question 37 - Urban visits

Some families which were categorised as giving no reply were those who did not answer the question but were recorded by GPS. Most families visited weekly or fortnightly. The GIS could be used to view changes by geographical location and look at flows of local people to centres and where tourists might buy their food.

Q38: What goods do you buy?

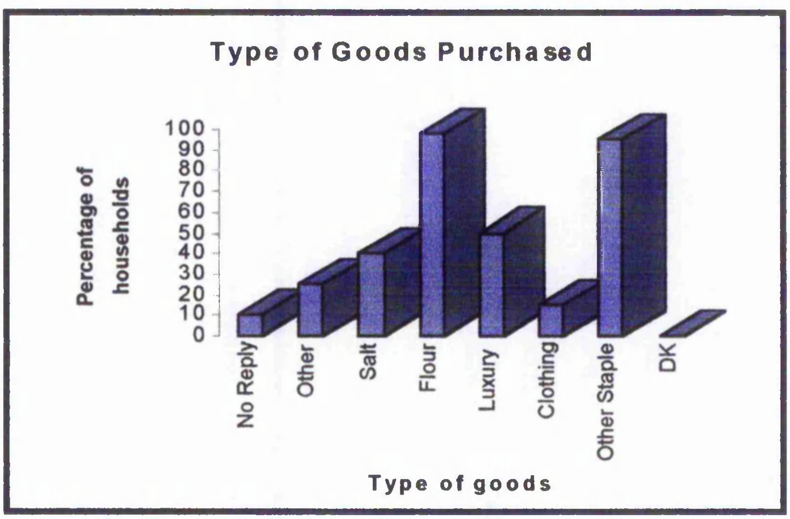

FIGURE 7.18: Question 38 - What goods are purchased

Flour and other staple products are the most commonly mentioned. Other items include matches and cigarettes. Luxury items include sugar, chocolate and oil etc.

Q39: What goods would you like to buy?

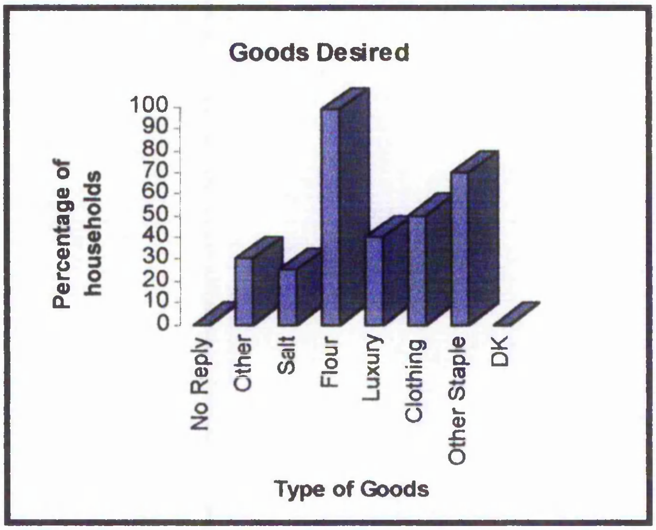

FIGURE 7.19: Question 39 - Requirements

Flour increases and also clothing/fabric. There is a great shortage of fabric.

Q40: Do you supply food or other goods to tourists?

Those who responded yes (5 percent) tended to be located close to Hatgal or near to the tourist camps on the west side of the lake and therefore had opportunities for supply.

Q41: What?

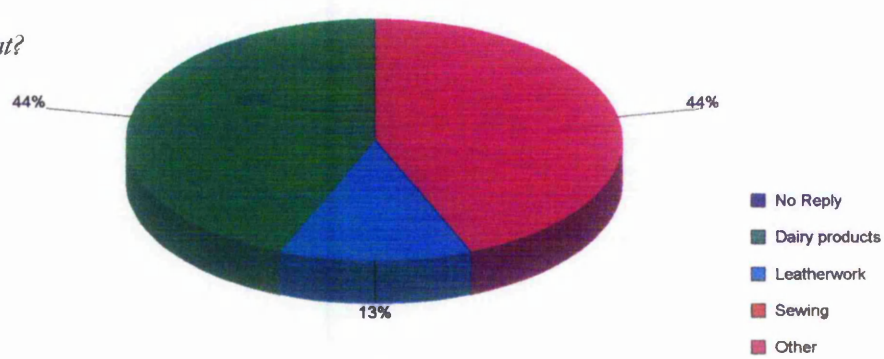

FIGURE 7.20: Question 41 - What (re. Q40)

Of the 5 percent of total, Dairy products account for the major surplus, whereas leatherwork accounts for both a surplus and an extra skill.

Q42: Do your children want to work in a commercial centre, or the ger?

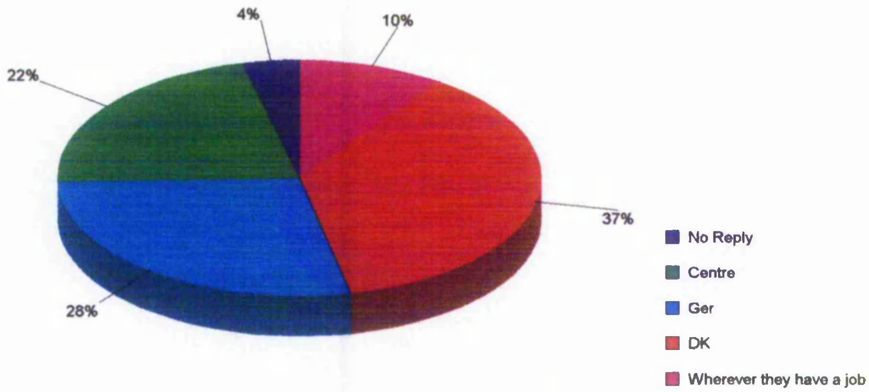

FIGURE 7.21: Question 42 - Children's jobs

The Centre:*ger* ratio is fairly equal depending upon how important herding is to the household, and whether there is a job available. Those who responded DK tended to have children who were too young to have an opinion.

Q43a: Why? [Centre]

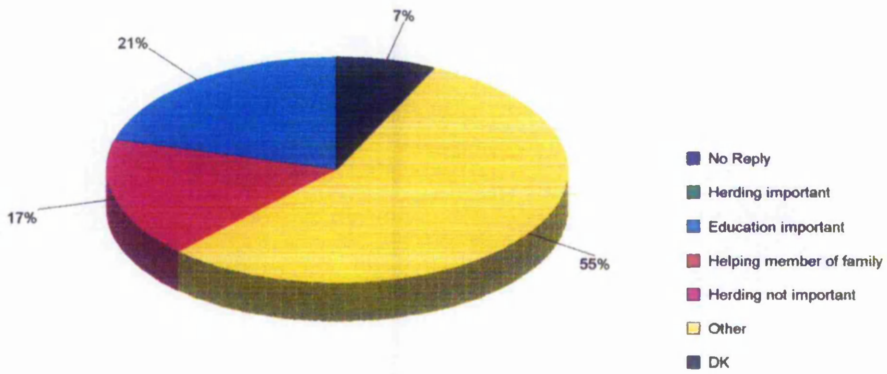

FIGURE 7.22: Question 43a - Why centre (re. Q42)

Those whose children wanted to work in a commercial centre felt that a job was important.

Q43b: Why? [Ger]

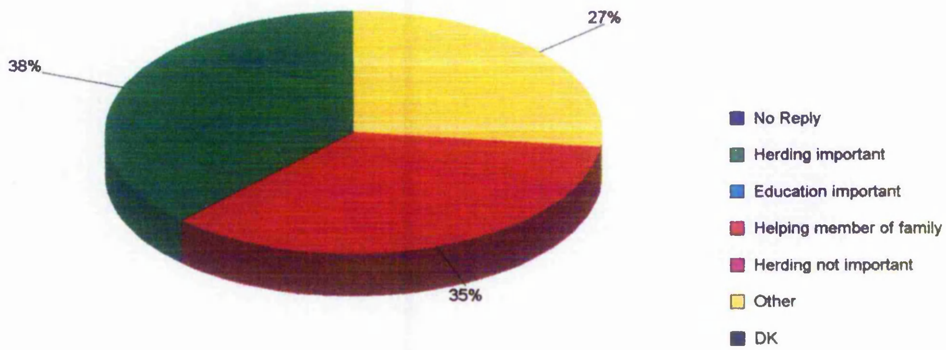

FIGURE 7.23: Question 43b - Why ger (re. Q42)

Those whose children wanted to work in the *ger* felt that herding is important, and also helping their family.

Q44: What role does gathering play in your consumption?

Of the 134 households, 75 percent responded that they used wild onions. Two plants used for medicinal purposes (Rudskiy, 1987) were identified by 52 percent of households. Only 4 percent of households said that they didn't use any plants at all. In total, over 20 different varieties of plants were mentioned by households as being of importance to them, some of them found on the Ministry of Nature and Environment's 'Endangered Species' list (Caddick, 1996).

Q45: How important are these in your diet?

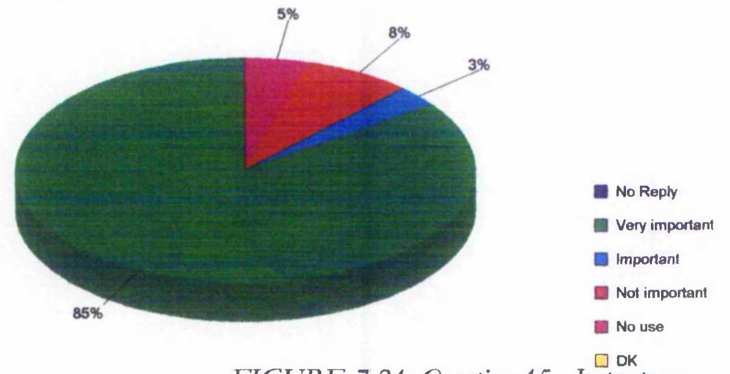

FIGURE 7.24: Question 45 - Importance

Plants are considered very important in terms of medicinal their medicinal properties and are collected by most families. However, there are still some families who feel such plants are not important or do not use them. This seems to be more of a family tradition than a result of any geographical influence.

Q46: Which animals do you hunt?

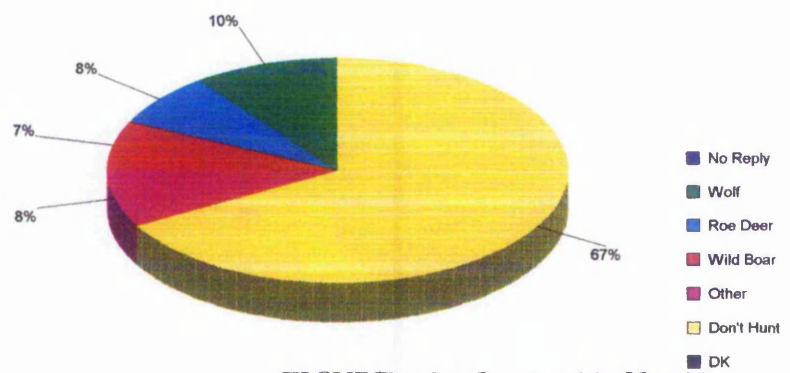

FIGURE 7.25: Question 46 - Hunting

The 67 percent of respondents that reported they did not hunt is an unrealistic estimate - a greater number of people hunt than this. It is known by observation that there are many other guns in people's *gers*. Apart from this result, most animals are hunted on an equal basis, which may suggest that people do not see any differentiation between them as food and as trophies to be sold to tourists. However, this gives some baseline information from which to work up estimates.

Q47: Do you think the numbers of wolves are increasing?

95 percent of respondents felt that the numbers of wolves were increasing. 2 percent said no and 3 percent gave a 'don't know' response. On reflection, this should have been worded as 'changing', however the researcher feels that the results are still reliable as many people offered evidence to support this, before this question was asked (Question 12).

Q48: Why?

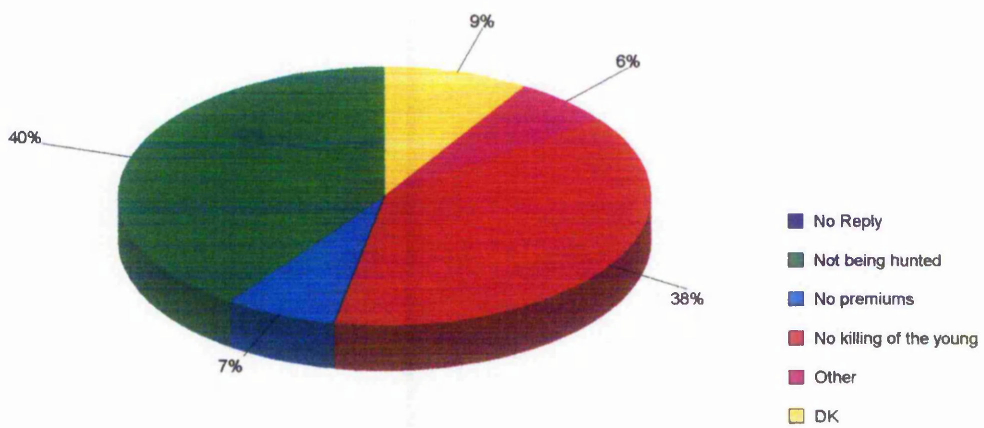

FIGURE 7.26: Question 48 - Why (re. Q47)

There is no official hunting or organised killing. Additionally some people bemoaned the fact that premiums no longer exist and their expertise as hunters is no longer valued either as a skill or in monetary terms.

Q49: Do you feel visitors respect your customs?

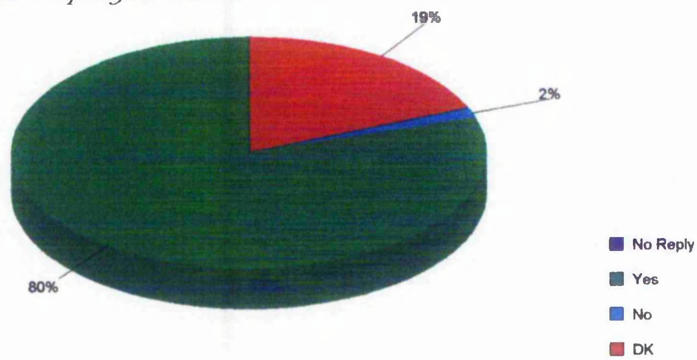

FIGURE 7.27: Question 49 - Respect of customs

In this instance, DK was used as a clause for people who have never met tourists before and also those who mean no, but are too polite to say it. Therefore, there is some bias inherent in this question, and the 'no' category can realistically be expected to be larger than it appears.

Q50: Does it matter if visitors do not understand how to act?

Yes (90 percent), because communication is difficult and people would get no help from local people. DK (8 percent) probably means yes but these people do not wish to offend. This clearly indicates a need for visitor guidelines to outline local customs and culture, to be readily available in a variety of languages for visitors to the Park. A 'no' response accounts for only 2 percent of those surveyed.

Q51: Are tourist camps good or bad?

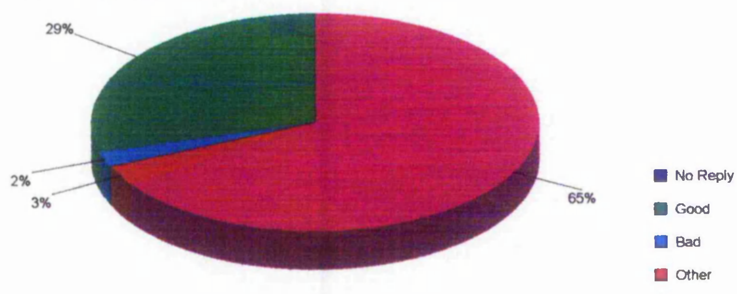

FIGURE 7.28: Question 51 - Tourist camps

Camps mainly have a good reputation. The people saying DK usually have never seen a camp, or are not willing to say whether they consider them good or bad.

Q52a: Why [Q51=(1)]

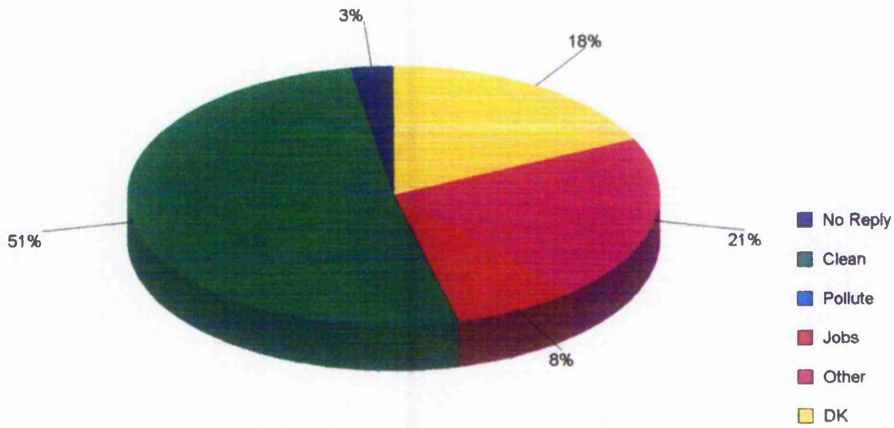

FIGURE 7.29: Question 52a - Why good (re. Q51)

The main comment is 'clean' (51 percent), but 'jobs' are also featured. The DK's may say they feel the camps are good because they think they have to, therefore they cannot say why.

Q53: Are you happy to meet tourists?

An overwhelming majority (93 percent) answered yes. No respondents said no directly, as people see the researcher as a tourist and therefore it would be rude to offend. 'Not important' (4 percent) and 'don't know' (3 percent) may mean no in an oblique way, usually seen as visiting being a part of everyday life, so tourists are not treated any differently from local hospitality.

Q54: Why?

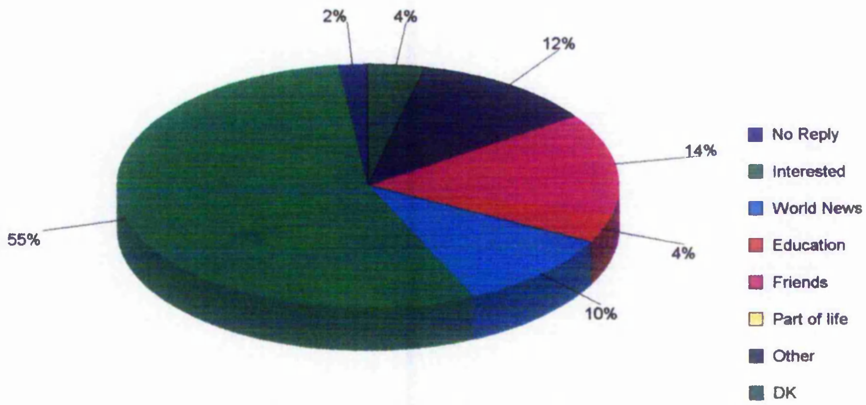

FIGURE 7.30: Question 54 - Why (re. Q53)

Most people are interested and want news (both national and international) and friends, vocal contact and relationships.

Q55: Which places do you consider to be beautiful?

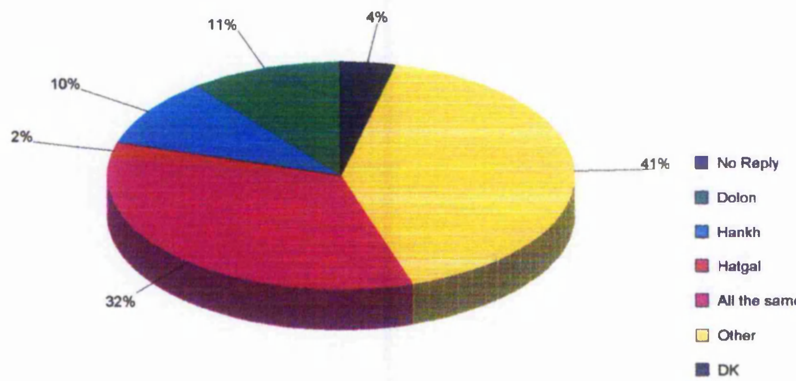

FIGURE 7.31: Question 55 - Beautiful places

Lots of people feel that all places are the same, while others identify the area they are living in as beautiful, which is why Hankh attracts high numbers because there is a high density of people in those areas. Dolon was also mentioned, but has a lot of wildlife, which seems to be the basis for many decisions of beauty. A GIS is a tool which can allow managers to make predictions of areas of scenic beauty (Bishop & Hulse, 1994).

Q56: Would you want your children to be involved in the tourism industry?

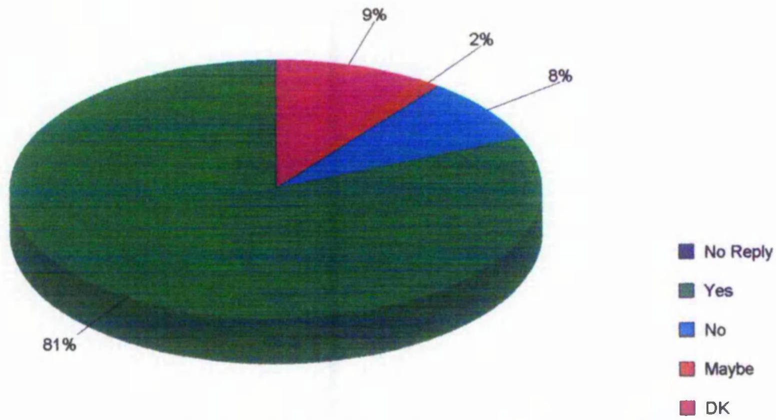

FIGURE 7.32: Question 56 - Children in Tourism

Mainly yes, but there is also a significant number of no's. DK may mean that a household has no children. Those who responded 'maybe' may mean some link established with the researcher, and are not willing to offend, or may mean it depends upon the benefits to the family.

Q57: Why? [Q56=(1)]

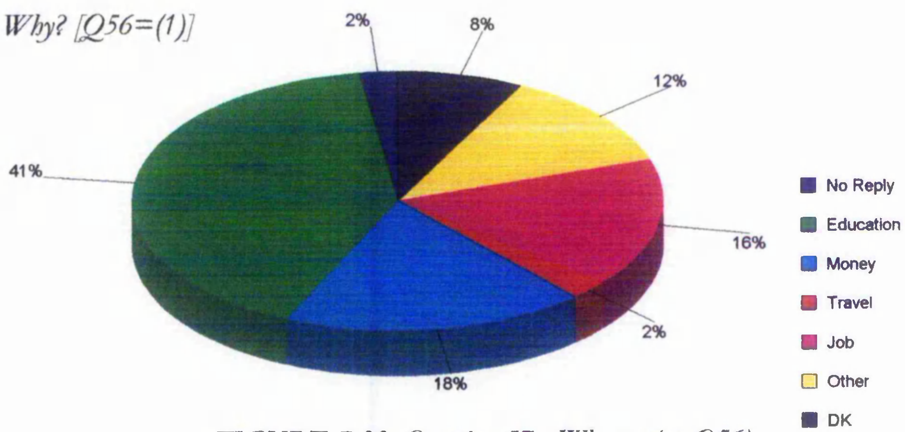

FIGURE 7.33: Question 57 - Why yes (re. Q56)

Involvement in the tourism industry is seen as positive mainly because of the possibilities of education, job, money etc. Travel did not feature strongly.

Q58: Are there any Protected Areas or regions where visitors shouldn't go?

Generally, no specific places were mentioned (67 percent). Only 5 percent said yes directly, but the DK's accounted for a further 23 percent of respondents and might be expressing that there could be areas where visitors shouldn't go, but they are not sure of any, or that they weren't entirely sure of what was implied by the question.

Q59: Why? [Q58=(1)]

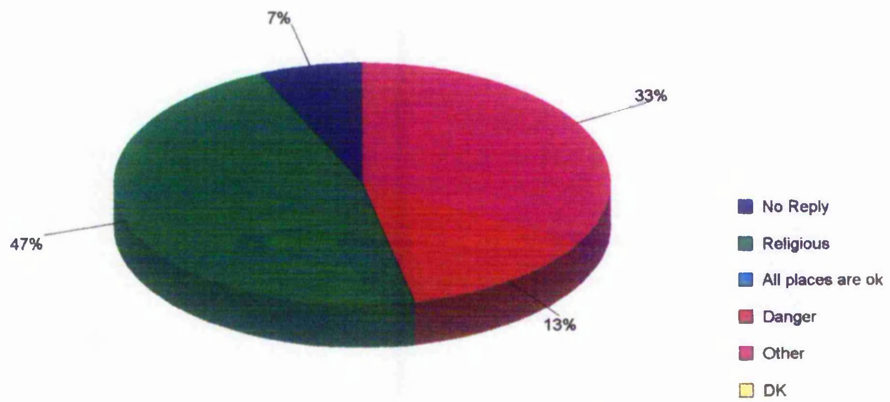

FIGURE 7.34: Question 59 - Why yes (re. Q58)

The main reasons why tourists should avoid certain areas was mainly due to reasons of religion, or danger. Other answers may be that some places are sensitive to stress or disturbance.

Q63: Who decides who uses the region's resources?

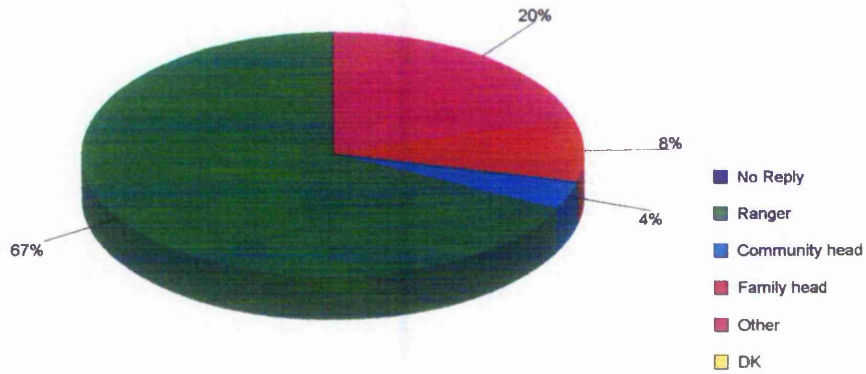

FIGURE 7.35: Question 63 - Who manages resources

The answers indicated that most people felt that the forest rangers should decide who uses the local resources, i.e. representatives of the local administration rather than the National Park administration. There is not perceived to be much communication between them.

Q64: Are there any disputes?

76 percent of respondents said that there weren't any disputes, although a significant proportion (20 percent) indicated that there were and 4 percent didn't know

Q65: What over?

Of the 20 percent of households that felt there were disputes, these households indicated that the majority of disputes are over the cutting of wood (56 percent) and also disputes between what the lake and forest rangers recommend (41 percent) which includes the payment of taxes. Disputes over pasture represent 6 percent of the total responses.

Q66: If a spring, river or lake was polluted, what would you do about it?

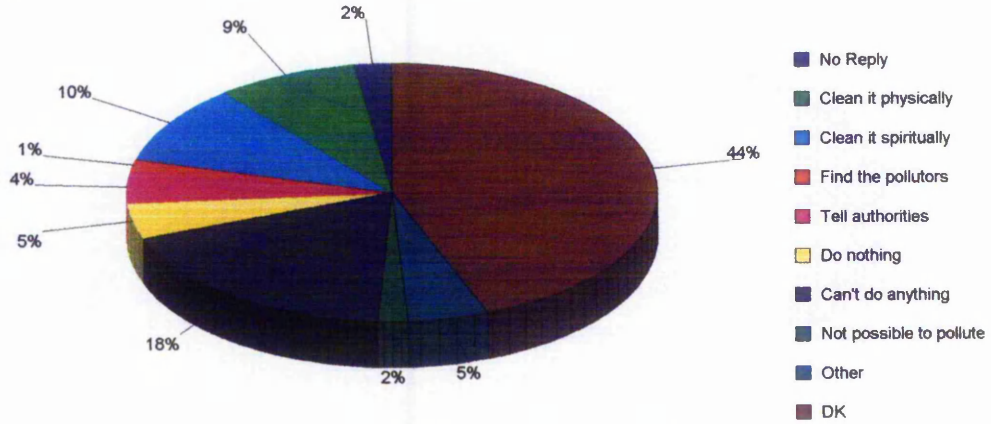

FIGURE 7.36: Question 66 - Pollution

DK is the largest, many people have no concept of pollution so they aren't sure what they could do. In total, those advocating some kind of action accounted for 24 percent of the total responses. 71 percent opted for responses that represented no action. 5 percent of respondents opted for a solution other than those listed.

Q67: How do you usually deposit your garbage?

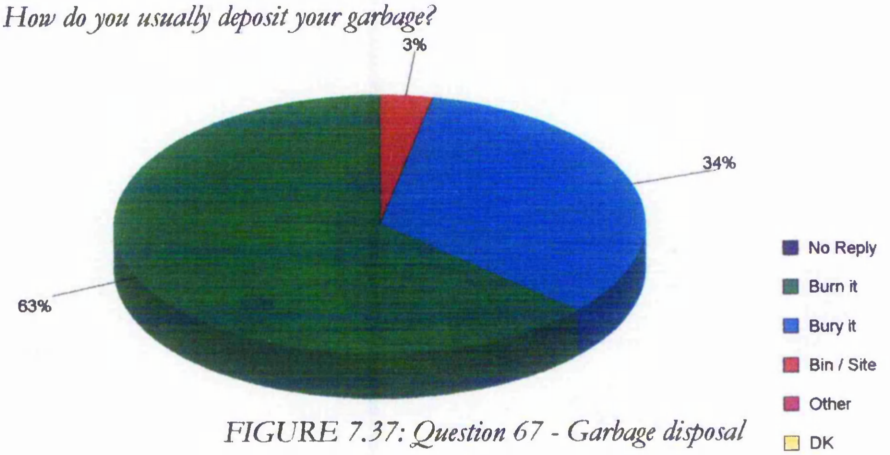

FIGURE 7.37: Question 67 - Garbage disposal

Garbage is mainly burnt as fuel, i.e. fuel conservation. Not much garbage is produced, however, but any excess which cannot be burned is buried. There is evidence of rubbish tips on commonly used pasture.

Q68: What do you do with your animal dung?

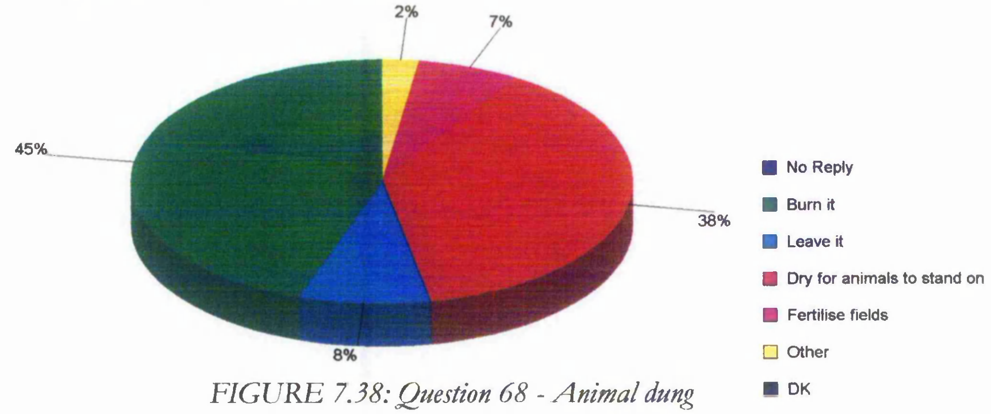

FIGURE 7.38: Question 68 - Animal dung

Dung is also burnt by many families, or dried and made into flooring for animal cots etc. Also mentioned is the fertilisation of pastures.

Q69: From what source do you obtain your fuel?

Most get fuel (gasoline) directly from a commercial centre (38 percent), not through a friend, or other method; but mainly people do not use it at all (62 percent).

Q70: What is the cost per litre?

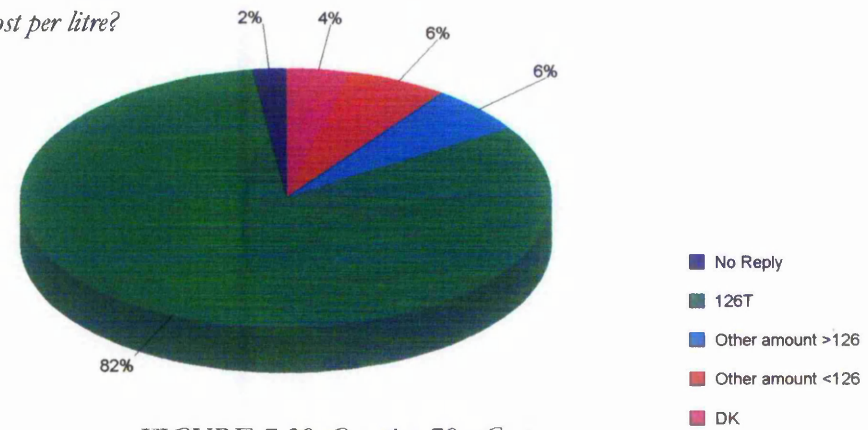

FIGURE 7.39: Question 70 - Cost

Most people know the exact amount and of the others, they were within 10 tugriks more or less.

Q71: Are you happy with your dwelling?

Most people (94 percent) say yes they are happy with their dwelling – it is not common (only 6 percent) to express dissatisfaction with life.

Q72: Dwelling type

The GIS could be used to monitor wood resources and nearby dwelling types. Most people are living in *gers* (68 percent). Many people are changing to wood cabin ownership for summer. This presents conflicts of wood collection, where local people must pay a tax for the amount of wood they propose to collect and also must be directed to appropriate sites for cutting.

Q73: Would you prefer another type of dwelling?

Most are happy with their dwelling type (72 percent), although 28 percent would prefer something different, mainly wooden cabins, but some want a new *ger*.

Q74: Has the National Park led to any changes in your lifestyle?

Most people (98 percent) say no, either people have resisted what they have seen as change, or the National Park has not exerted any changes through implementation of its regulations or boundaries.

Q75: How can the National Park help you?

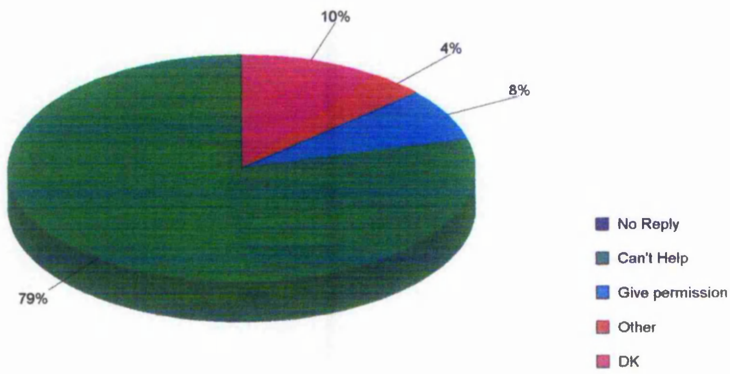

FIGURE 7.40: Question 75 - National Park benefits

Most people feel that the National Park cannot help them. This might indicate a lack of understanding of National Park objectives or lack of communication.

Q76: If you had a problem with something to do with the National Park, where would you go?

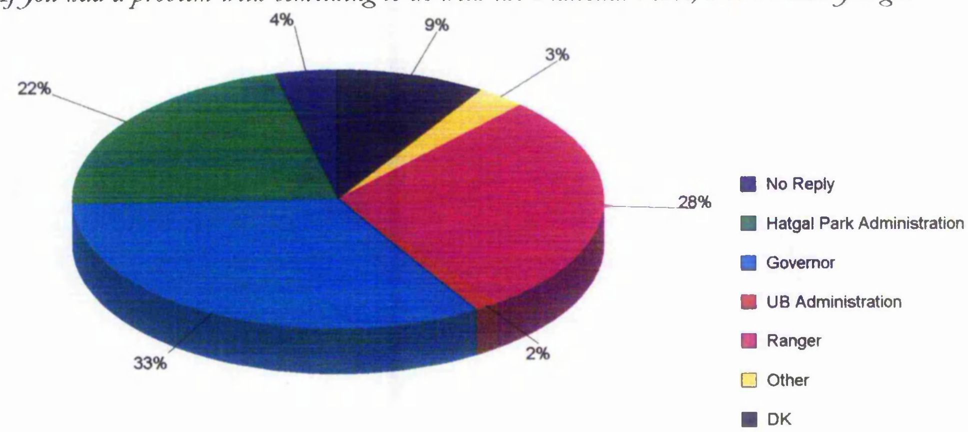

FIGURE 7.41: Question 76 - National Park problems

Most people would go to the Governor and forest ranger. Only 24 percent go to the National Park administration at any level.

Q77: What taxes do you pay to the National Park?

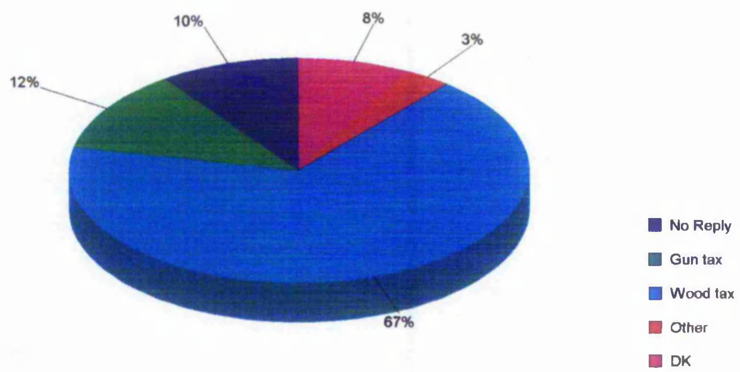

FIGURE 7.42: Question 77 - National Park taxes

Most families report paying a wood tax – which is a fee based on the amount of wood they propose to cut. In most cases, there was the impression that people wouldn't pay taxes if they could get away with it. A number of households reported that they did not pay a gun tax, but guns were observed in the *ger.*

Q78: Is the interviewee male or female?

52 percent of respondents were female, 48 percent male.

7.2.6.1 Analysis

Most local people use a tributary as their source of water (Q1). This means that any pollutants released into the water supply are likely to undergo some dispersement before they reach the lake. Conversely, visitors to the region and the tourist camps, locate close to the lake edge and that is their main source of water. Although National Park rules advise upon the distance from the lake that amenities should be located, only the permanent tourist camps are in a position to have these regulations enforced Evidence shows that a substantial proportion of visitors to the region are independent travellers and, therefore, are more difficult for the National Park to track. The National Park should be aware of the potential for pollutants to enter the lacustrine environment. Although they discourage independent travellers, if we are to believe the manager of Janghai tourist camp in his estimate of 25,000 visitors to the Khövsgöl area in 1996, then we must take the position that these visitor represent a substantial risk.

Some form of further restrictions and monitoring should be employed by the National Park, in order to identify and track the locations of these visitors in the Park. One suggestion already raised by Discovery Expeditions participants is to assign a guide to each group. This would enable the National Park to gain revenue from this significant group of visitors, while maintaining control over their movements and actions and mitigating their impacts as far as possible, while still allowing them freedom to explore the Park. It would also provide a source of employment for local people and encourage them to relate more closely to National Park objectives, having a vested interest in the preservation of the environment. 79 percent of families surveyed feel that there is a problem of unemployment in their area (Q29). Further monitoring of visitor movements around the Park would enable the National Park to use a GIS to model labour resources and manage a guiding strategy.

Most people make their seasonal movements using a yak – the traditional form of transport (Q3). Trucks and jeeps are not used because most families do not have the surplus of cash available to be able to purchase fuel and spare parts (if indeed these are available at all). As a result of changes in the economy of the region and an introduction of a new tourism structure, the National Park should monitor issues like this, to see if more vehicles are being used within the Park. Early warning of these sorts of changes will alert managers to a potential increase in detrimental impacts due to the use of more vehicles within the Park. A GIS makes it easy to identify particular areas of localised vehicular increase and relate these to the sensitivity of the environment to that sort of activity.

By identifying families which don't have enough labour (Q7), the GIS manager can decide if there are any areas within the National Park which would not be able to supply labour for tourism developments. Households with a very low standard of living could also be targeted for other types of aid.

Quality of pasture (Q9) is subjective, in the sense that it depends upon the viewpoint of the individual herder and also the types and numbers of livestock that they are herding (Tserendash & Erdenebaatar, 1993). It also relies, to some extent, upon the local climatic conditions. This question does not take into account those families living outside the Park boundaries in the summer. The restriction of this data should be interpreted in context. A full GIS would be composed of responses from all families having links with the National Park. Some of this information could be collected in winter, but local government officials or National Park rangers.

Where people felt that there was not enough pasture for their livestock (Q10), this would be an important consideration for potential developments that might restrict this pasture to an even greater extent, or conversely, aim to develop in regions of poorer pasture and compensate those local people relying on that land so that overall, their standard of living is improved.

Question 12 highlights the feelings of people towards animals such as the wolf. Perceived problems are divided, around half of those surveyed felt that they had problems with wild animals. Although Q47 illustrates that 95 percent of people feel that the number of wolves are increasing, the differences in perception of problems seem to occur as a result of the skill local herders have in managing their animals. Those who spend a lot of time watching and protecting their herds and bringing them close to the *ger* (sometimes in fenced pens) at night, tend to have fewer problems with wild animals (Ganbaatar, 1996). Those who have enough labour available to them are able to 'distract' wolves by shouting (Q11). Others use guns, but this involves the payment of a gun tax (Q77). Only 12 percent reported that they had paid a gun tax, but greater numbers of guns were observed in *gers* around the Park. Moreover, around 33 percent of households said they hunted at least one species of animal (Q46), wolf, roe deer and wild boar being the most common mentioned.

The National Park already has provision for hunting in the sale of permits to hunters (foreign or Mongolian). What needs to be established, however, is the monitoring and management of tourist hunters and also greater information about the distribution and amount of wild animal stocks within the Park. Harper (1995) found evidence that there were greater stocks outside the National Park boundary than inside. By managing tourism income to prevent leakage of funds and directing them within the local communities, the general standard of living can be raised, reducing the need for local people to supplement their domestic herd supply with wildlife. Moreover, those who consider themselves 'unemployed' might gain employment within the tourism industry, acting as guides, interpreting the landscape or wildlife.

81 percent of people would like their children to be involved in the tourism industry (Q56) and 93 percent stated that they were happy to meet tourists (Q53) because they want to make other interesting friendships and hear news from outside the region. However, there are spatial variations in responses and patterns of response around the Park. In this way, a GIS would be able to generate maps of responses, in order to compare regions of the Park for potential developments. For example, a manager would be able to determine where groups of people that gave specified combinations of responses were located. Since one of the strengths of GIS is to be able to undertake complex analyses, the same interrogations could be carried out across a five or ten year span. This might give evidence of changing perceptions a cross a number of years and also allow tourism developments to be related to these changes in some way. Without a GIS, generalised changes might be inferred, but there would be no way of making these more complex analyses.

Attitudes towards the National Park can also be tracked in this manner. At present, 87 percent of people feel that the National Park rangers don't help them in any way (Q13) and 79 percent feel that the National Park can't help them (Q75). This feeling of disassociation with the National Park is reflected in the responses to Q74, where 98 percent of households felt that they hadn't experienced any lifestyle changes through the National Park. Whether this means that they are continuing to practice their way of life, despite the National Park regulations, or whether these regulations are not known by households is not clear from this survey. However, from the responses to other questions such as Q46 (which animals do you hunt?) and Q63 (who decides who uses the region's resources?), Q64 (are there disputes?) and Q65 (what are they about?), it can be inferred that local people continue to rely upon local government officials rather than the National Park authorities in their negotiations over land and resources. This is further borne out by the responses to Q76, where most people having a problem with something to do with the National Park would go to the Governor or forest ranger. Only 24 percent of respondents would go to the National Park at any level.

Questions 21-23 relate to the breakdown of labour within the household, between males, females and children. A general understanding of these roles can be made by managers in the region as this has a direct relation to the availability of labour for supporting tourism developments. However, the use of a GIS would benefit managers through allowing them to determine any regional variations in labour patterns. For example, in a number of areas, males undertook some of the roles traditionally undertaken by females. In other areas, children undertook the majority of work outside the *ger*, leaving the adult males with little to do. This would allow other household members to make a commitment to jobs in other industries and take advantage of opportunities in tourism. This kind of analysis could not be taken at this small-scale view without a GIS, unless a survey was carried out each time, with all the associated time and cost that the venture would entail.

79 percent of respondents felt that there was a problem of unemployment in their area, and 65 percent felt that they would like to start a small business (Q24). Although most families don't produce a surplus of dairy products or leatherwork to sell, bartering and exchange probably takes place between them (Q35). Since surplus production in each family would be quite small, a number of families could form a co-operative in order to produce enough dairy products to sell to tourist camps. At present, only 5 percent of the households surveyed (Q40) currently supply goods to tourists, these are mainly found located around the tourist camps.

In terms of the local community, there seems to be very little intra-household migration out of the region, excepting relocation due to enlistment in the armed forces, or marriage (Q27). However, the overall number of people in the region has fallen (Table 1.14), indicating that there has been a migration of whole families out of the region. Since the decline in industrial significance of the area, the standard of living has fallen. Although 64 percent of people feel that it isn't difficult for them to see a doctor (Q31), most cannot get the medicines they need (Q32). There is also a significant split between those households wanting to see a contemporary doctor and those wanting a traditional doctor (Q34). Wingard (1995) notes that there is no shortage of contemporary medicines in Ulaanbaatar from aid supplies shipped in from other countries, but there are difficulties in the transport of these supplies around the country. Tourism companies could play a part in the transport of these sorts of supplies, contributing to the sustainability of the local economy.

A GIS would also be used to model flows of tourists and local people to the commercial centres. Most households visit their local centre either weekly or fortnightly (Q37) and buy mainly staple foods and some luxury items such as cigarettes (Q38). One of the most common goods that people would like to buy is clothing or material (Q39). Increasing the importance of Khövsgöl in supply routes, through tourism, would promote the shipment of goods into the region, encouraging the local economy.

Within most households, the collection of plants seems to be a highly important feature of their diet (Q44), although not in great quantities. The use of plants can be divided into nutritional and medicinal requirements, with the greatest number of varieties of plants being noted by households as used for medicinal remedies. The habitats of some of these plant species are highly specific, in that they require particular climatic and geomorphological conditions to survive. These conditions may occur sporadically or rarely within the National Park, which means that there is a potential for these species to be depleted in some areas. Moreover, the presence of activity in some sites may cause degradation of plant cover. It would be interesting to monitor local communities, using a GIS, to establish whether the influx of contemporary medicines would decrease the amount of gathering for medicinal use. This would have to be closely linked to communities or groups of households that preferred contemporary doctors. Without the use of a GIS, those households that stated a preference for contemporary (rather than traditional) doctors would have to be plotted onto a map by hand and then suitable communities selected. This information is already part of the GIS database, plotting a map and commencing more complex analyses takes only a few seconds.

This divergence of the old and the new is also illustrated in the changing types of dwelling in the region. 68 percent of people currently live in a *ger* in summer (Q72) and of those, 41 percent would prefer another type of dwelling, usually a wooden cabin. This change in requirements is derived from a number of economic and social transitions. Over a number of years, wooden cabins have been found to be cooler in summer. This means that the warmer *ger* can be saved until the winter months which also reduces the amount of wear and tear that it suffers. At the same time, the costs of *gers* and *ger* furniture has risen steeply. Ganbaatar (1996) relates this to the decline in numbers of skilled craftsmen in the region.

Attitudes of traditional and contemporary are also illustrated by Q66 where households were asked about their response to pollution. Feelings were split between cleaning the pollution physically and cleaning it spiritually, although 71 percent of the households would take no action at all, often through a feeling that it was out of their control to take action, or, perhaps more seriously, that it wasn't possible to pollute the water supply in the first place.

These attitudes also extend to garbage disposal (Q67). Although 63 percent of households indicated that they burned their garbage, 34 percent indicate that they bury it. However, sites of refuse were often seen on commonly used pasture and the lengths of wire that were found along the Eastern shore of the lake from Hatgal to Hankh were a danger to livestock. Themes of pollution were also brought up in the responses to other questions. Q51 asked people's opinions of whether tourist camps were good or bad. The main reason given for those feeling that camps were bad, were that they pollute the environment, whereas the main reason for those feeling that the camps were good, was that they are 'clean'.

This is another interesting theme that a GIS could be used to explore. If the locations of each household were plotted within the National Park and their feelings about camps were displayed, particular tourist camps could be identified, around which, feelings were broadly similar. National Park managers could use this as a measure of camp impact upon the local community and identify the positive or negative feelings it had communicated. Over a number of years, this analysis might provide evidence to show how community perceptions changed. This is especially important in the case of visitor interactions with the local community. Those households in close proximity to a tourism development might be expected to encounter visitors more frequently. Although an overwhelming majority of households feel that they are happy to meet tourists (Q53), 90 percent also feel that it is very important for visitors to understand how to act (Q50) and be aware of local customs.

A number of measures were built into the survey, in order to generate information to establish whether a cross-section of the community was being surveyed. During pilot study interviews with households, questions which related to affluence or herder status were considered 'sensitive'. As a source of data for a GIS, herder status can be more accurately determined by livestock records held by local authorities. The Governor of Hatgal outlines one method of determining affluence, in this case a level of poverty is reached by calculating the amount of Tg/month for the head of a household (Section 7.2.5.2:95C). In terms of this community survey, it is important to determine whether a sample has been taken of a cross-section of the population. By comparing the numbers and types of livestock with the numbers of people in the household, a basic estimate can be proposed which relates the status of the household to its position above, around or below subsistence. Q15 demonstrates that each sector of the community is represented, while Q78 illustrates the distribution of responses across males and females.

7.3: Tourism Questionnaires

Although only thirty visitor surveys were returned, one of them was completed on behalf of a group of sixteen tourists. Overall, this gives a very small sample size (around 4.5 percent) compared with the expected numbers of visitors to the Western shore of the lake region in 1996 (1000). Although tourism trends should not be strongly predicted from these responses, some discussion can be drawn, nevertheless. Several tourists commented on specific aspects of their experience and it is important that these are taken into account as the respondents felt strongly enough about the issue to record their feelings.

Of the responses returned, 32 percent were from independent visitors. Although this may seem quite high, considering the attitude of the National Park administration towards independent travellers, the responses must be considered in context. The questionnaire was distributed to tourists by the chief ranger (Jambal) and although he may have left copies at the main tourist camps, it is also his job to monitor and collect fees from independent travellers. It is likely that questionnaires were given to them individually and so were more likely to be completed than those distributed in bulk at a tourist camp. Additionally, a number of copies were left with the ranger at the entrance to the Park. He would have distributed them to each tourist party that stopped to pay Park fees. Tourist camps such as Janghai and Toilogt pay Park fees up-front and so their jeeps do not tend to stop at the entrance as they are well known. Therefore, many tourists may not have received questionnaires.

Accessing tourists in the field is always likely to present difficulties because tourists are focused upon having a 'holiday' experience rather than completing visitor surveys or aiding in academic study. Work is precisely what most of them have come to get away from! This is particularly noticeable in terms of responses from Discovery Expeditions participants who have specifically chosen to come on an 'educational' holiday as 'ecotourists'. In this respect, they see their contribution to study/research as a constructive part of their overall experience and contribute strongly to both the interview in the pilot study and a number of visitor questionnaires during the second phase.

Since the questionnaires were given to the head ranger to distribute, this was a proactive method of distribution, coming from someone with local respect, authority and commitment. However, little tracking of the surveys was done after they left his possession. They were distributed to each of the main tourist camps and to the ranger at the entrance to the National Park .The commitment of those who received the surveys at the tourist camps and the authority of the ranger at the gate are not known. Additionally, the survey was only presented in English. A more exhaustive and authoritative study should be undertaken by the National Park itself, involving the production of a number of survey forms in different languages. Alternatively, the multi-lingual staff at the tourist camps could be utilised to deliver a survey to particular visitors that had been forewarned and given permission beforehand.

There are considerable barriers to this kind of data ever being collected. Primarily, the tourist camp administrators pay a tax related to the amount of profit their camp generates. It is in their interest to restrict access to statistics about the actual numbers of visitors, since a large number of visitors producing very small profits might raise questions. The National Park will have some information about numbers from seeing the numbers of visitors passing through the National Park entrance (when it is manned).

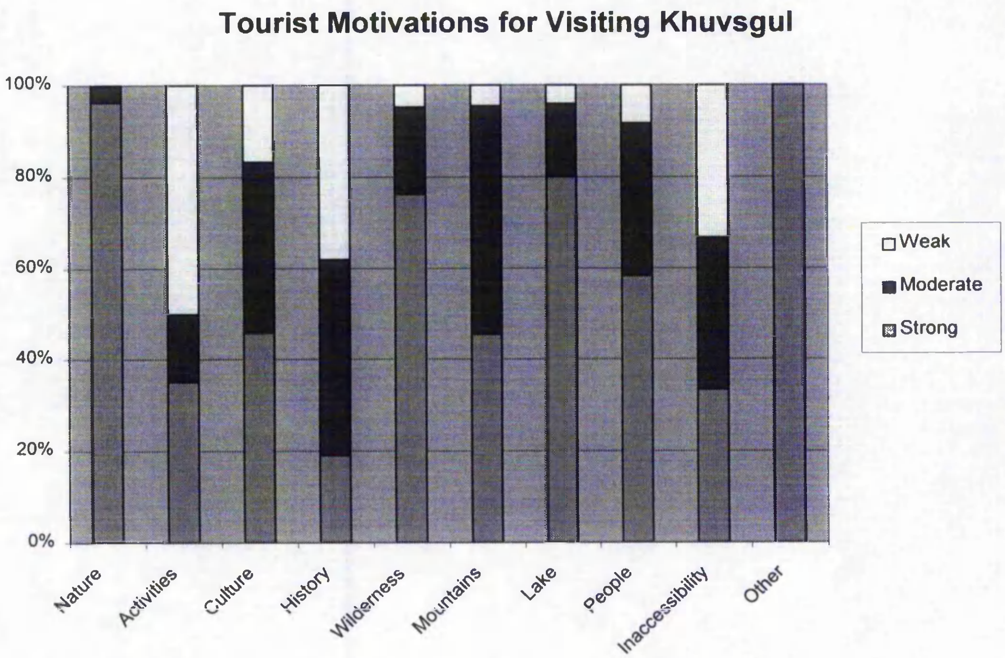

FIGURE 7.43: Tourist Motivations for Visiting Khövsgöl

Figure 7.43 illustrates tourist motivations for visiting Khövsgöl. The graph indicates the strength of each motivation as perceived by respondents. Figure 7.44 illustrates how these motivations are ranked from strong to weak. This gives an interesting trend whereby the top three motivations are elements of scenery. Next are interactions with local people and finally, recreational pursuits. This suggests that the requirements of this type of tourists are strongly centred around the natural environment. It is the scenery which is important to them, rather than the activities (Section 3.3).

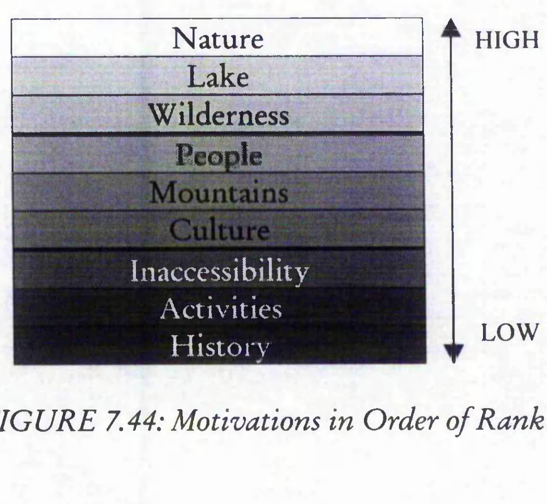

FIGURE 7.44: Motivations in Order of Rank

This is important in terms of management. If the numbers of tourists increase, then it is likely that the experience will be degraded for all of them and these type of visitors will be unlikely to return. From the survey responses, 78 percent of visitors said that they would return to the region. However, an overall theme of related comments was the tranquility of the experience and of hope that the region would not change when tourism increases. A number stated that they wouldn't return if tourism increased noticeably.

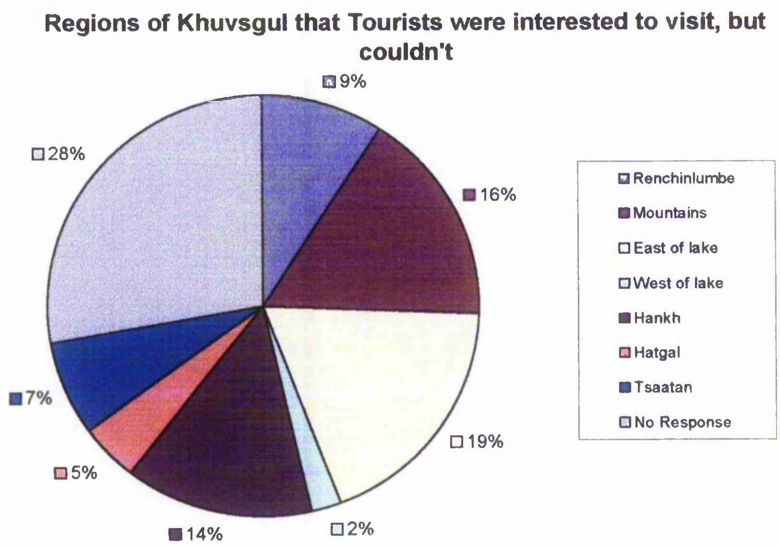

FIGURE 7.45: Regions of Khövsgöl that Tourists wanted to visit, but were unable

Many visitors (72 percent) expressed an interest to travel to other parts of the region (Figure 7.45), but were unable to do so The east and north (Hankh) of the lake were frequently mentioned, along with the mountains – perhaps expressing a desire to move away from the tourist camp. The overriding reason for not visiting these areas was lack of time (Figure 7.46) with around half of the respondents feeling that their time in Khövsgöl was too short. 9 percent of people were unable to make the trip due to lack of information or guides and a further 9 percent were constrained by the itinerary or costs of their tour.

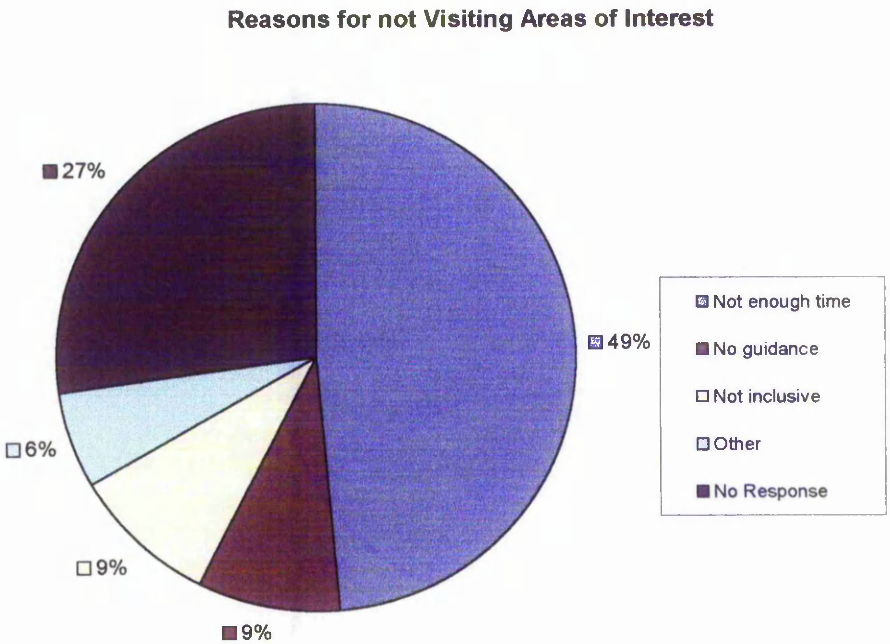

FIGURE 7.46: Reasons for not Visiting Areas of Interest

While in the region, visitors undertook a number of activities, the most popular being photography, interacting with local people, walking and horseriding (Figure 7.47). Additionally, botany and birdwatching were also mentioned and it seems that these activities were not subject to any form of constraint as there were no people who wanted to take part in them but could not for some reason. Fishing seemed to generate similar numbers of those taking part and those who wanted to take part and at least one visitor was able to undertake some form of hunting experience (it is unknown whether this visitor had any permit to do this).

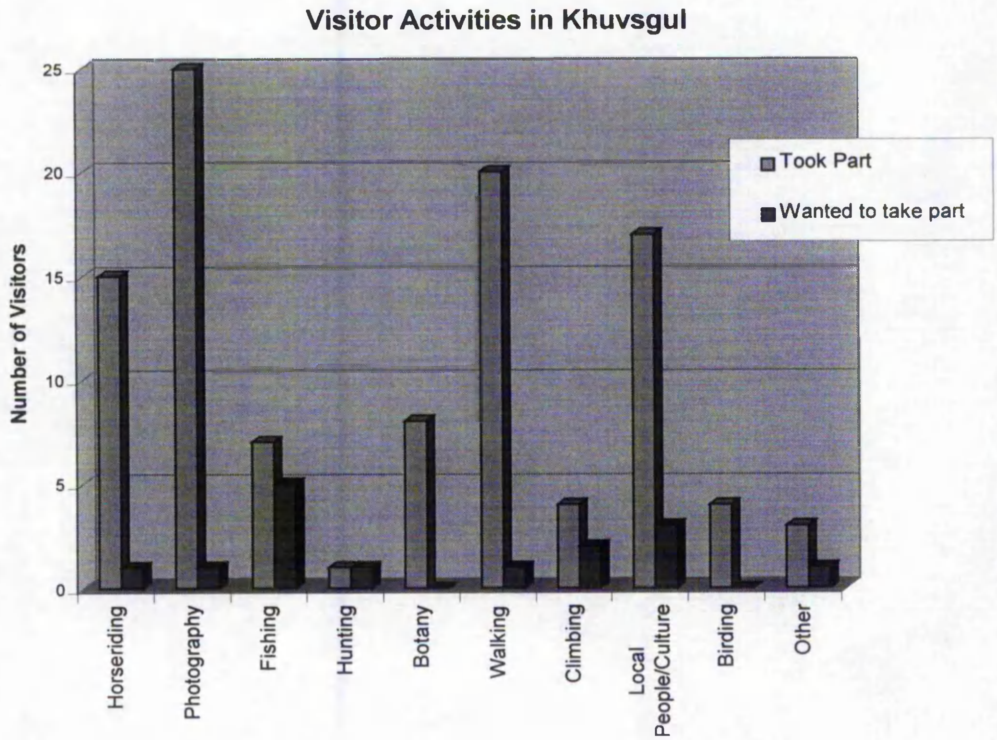

FIGURE 7.47: Visitor Activities in Khövsgöl

Perhaps it is also important to note that the same number of visitors that took part in hunting, wanted to take part in hunting but were unable. Extrapolating these figures within an estimated tourist population of one thousand suggests that around thirty visitors might have undertaken hunting in 1996 and an equal number expressed a desire but were unable. However, this is a very loose estimate due to the small sample size.

From the Community Survey (Section 7.2.6), strong feelings were expressed that it was important for visitors to be able to communicate with local families. Of those surveyed, only 22 percent did not have access to an interpreter or did not speak Mongolian. Several tourists remarked upon the difficulty of communication with local people and one found that the interpreters they were offered were expensive and did not have an appropriate quality of English for the task.

Overall, 70 percent of those surveyed reported some form of interaction with local people (Figure 7.48).

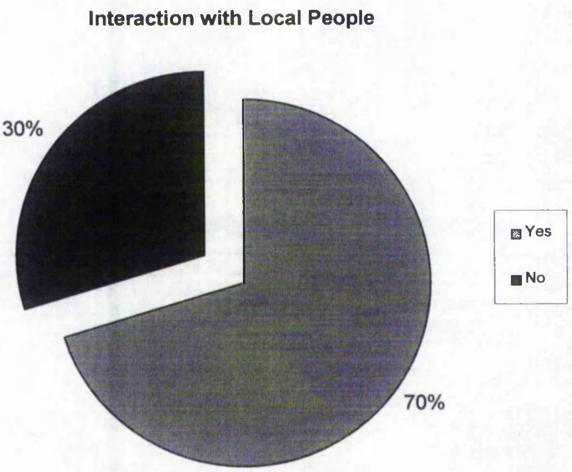

FIGURE 7.48: Percentage of Respondents that had some form of Interaction with Local People

Most interactions seem to take place informally and on the visitor's own initiative (Figure 7.49).

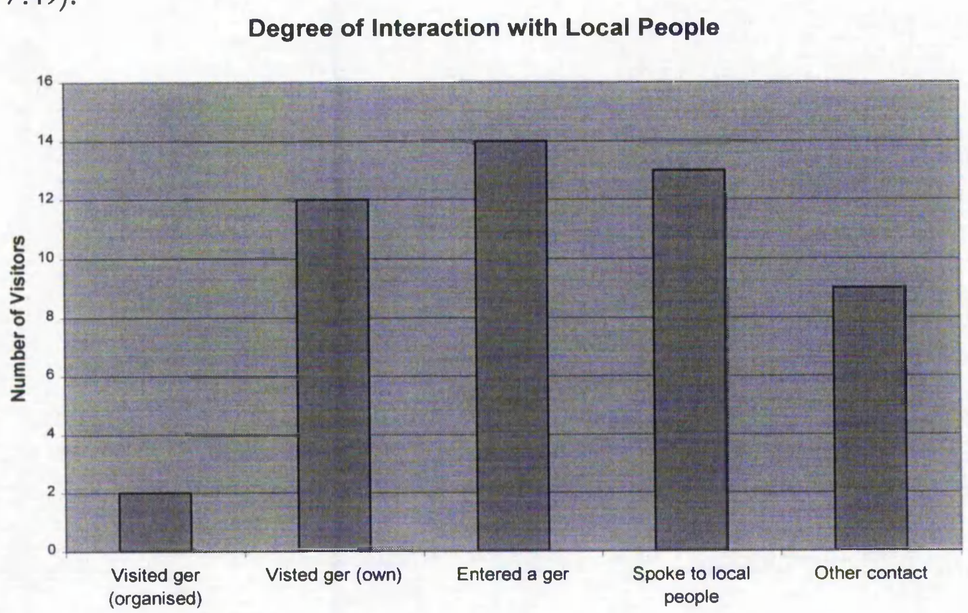

FIGURE 7.49: Degree of Interaction

It would seem that local people in the vicinity of tourist camps invite tourists to visit them. Only two respondents undertook any form of organised tour. This means that visitor experience and community interaction is limited to a very small geographical area around the tourist camps on the west side of the Lake. Any negative or positive feedback is shared between relatively few families.

Within Hatgal, visitors bought both luxury and staple food and drinks and also local handicrafts. The request to be able to buy handicrafts was also strong (Figure 7.50), giving a potential commodity to which other areas of the community could contribute and thus gain some local form of benefit from tourism.

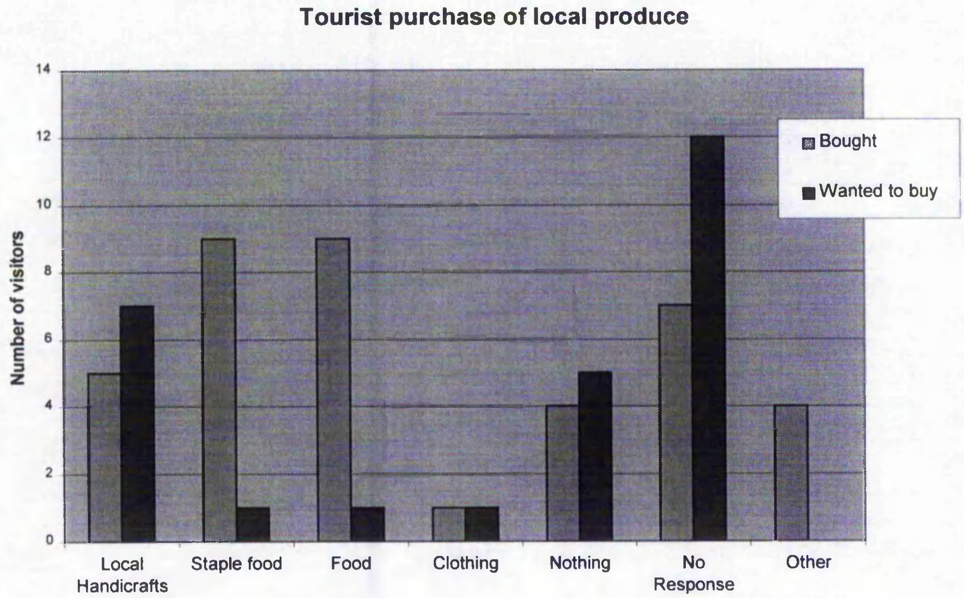

FIGURE 7.50: Purchase of Local Produce

59 percent of visitors surveyed indicated that a guide would have added to their experience. This theme was also explored indirectly in a number of comments. Several visitors remarked upon encounters with Park officials or rangers being unproductive in the sense of not receiving clear guidelines on behaviour and then

being criticised by them or being requested to move campsite later. This was also experienced by Discovery Expeditions in both 1995 and 1996 where a mutually agreed campsite was later found to be 'unsuitable' by the Park ranger and the group moved on. One visitor termed this 'poor public relations'.

Visitors also remarked upon the lack of information (again related to a general deficit of interpretation throughout the Park) and felt that 'foreigner exploitation' was taking place. They were also aware of the charging structure used by the tourist companies when compared with the lack of benefits going to local people. These are obviously negative impacts upon the visitor experience that need to be addressed.

Only 41 percent of visitors were aware of how much the Park fees were. Of these, 82 percent felt that the level was about right; although one visitor who worked in Mongolia and lived on a Mongolian salary was upset that he had to pay foreigner prices when in Khövsgöl.

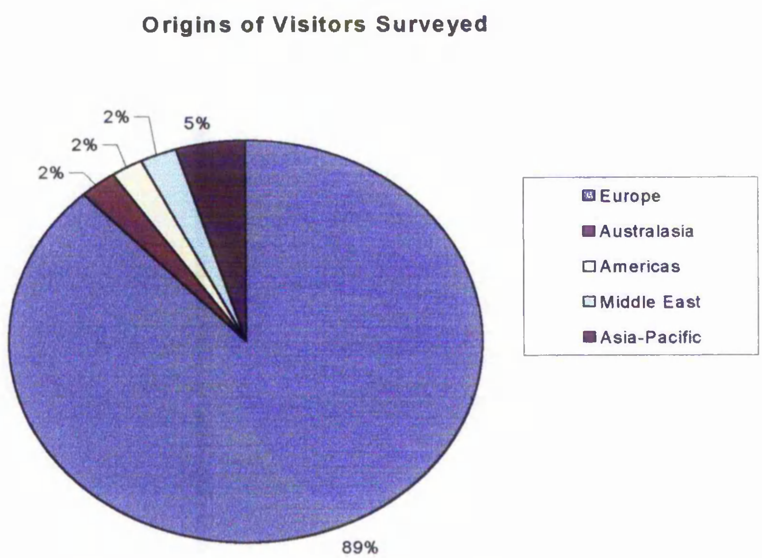

FIGURE 7.51: Origins of Respondents

From visitor demographics (Figure 7.51) it can be seen that the majority of visitors originate from Europe. However, this result is strongly influenced by the distribution of the questionnaire in English. Within Europe, Eastern Europe and the UK are particularly strongly represented. Figure 7.52 shows the age ranges of those surveyed. The age range 31-40 includes a group of 16 Czechoslovakians who completed one survey between them.

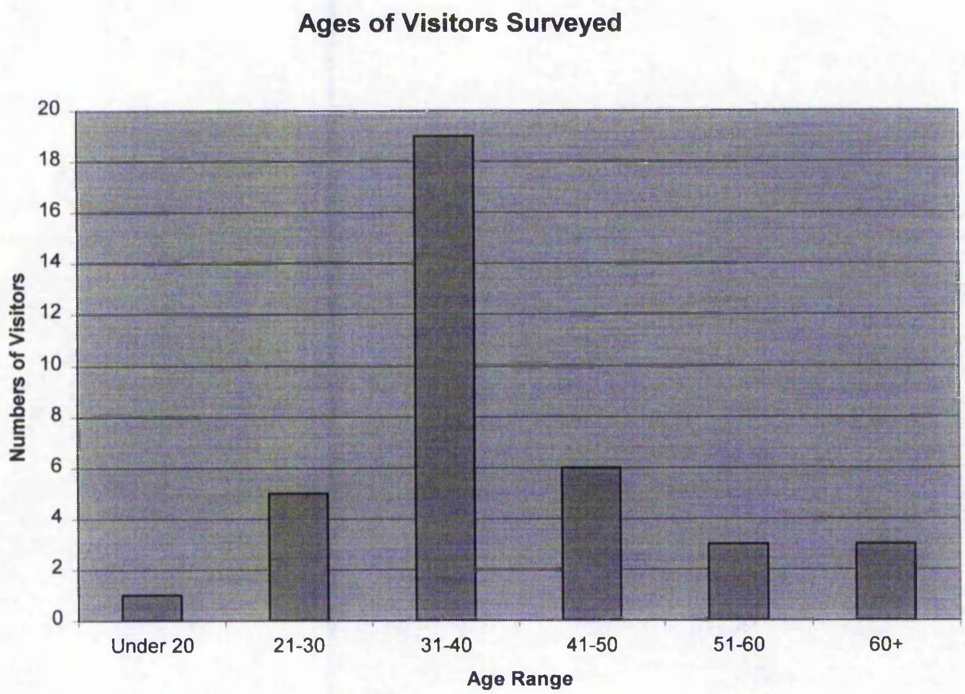

FIGURE 7.52: Age Distribution of Respondents

7.4: Hardware and Software

7.4.1 Data Availability

The availability of data for a GIS is a fundamental premise. For Khövsgöl, data can be identified from several sources (Figure 1.17). Additionally, satellite data would give a useful perspective upon which to build the database. Selected data is available from Russian 'Kosmos' satellites (Figure 7.53), Landsat (USGS, 1996) and NASA (1996). Most satellite data would need georeferencing[13] and some pre-processing in order to generate useable data. A useful analysis would be to compare data gathered during times of Soviet influence with newer data. This would also provide a baseline upon which to build a monitoring platform to identify broad, slow changes across the whole Park that might be due to climatic conditions or long-term community or visitor impacts.

[13] The relation of the pixels making up the satellite image to their actual location on the ground.

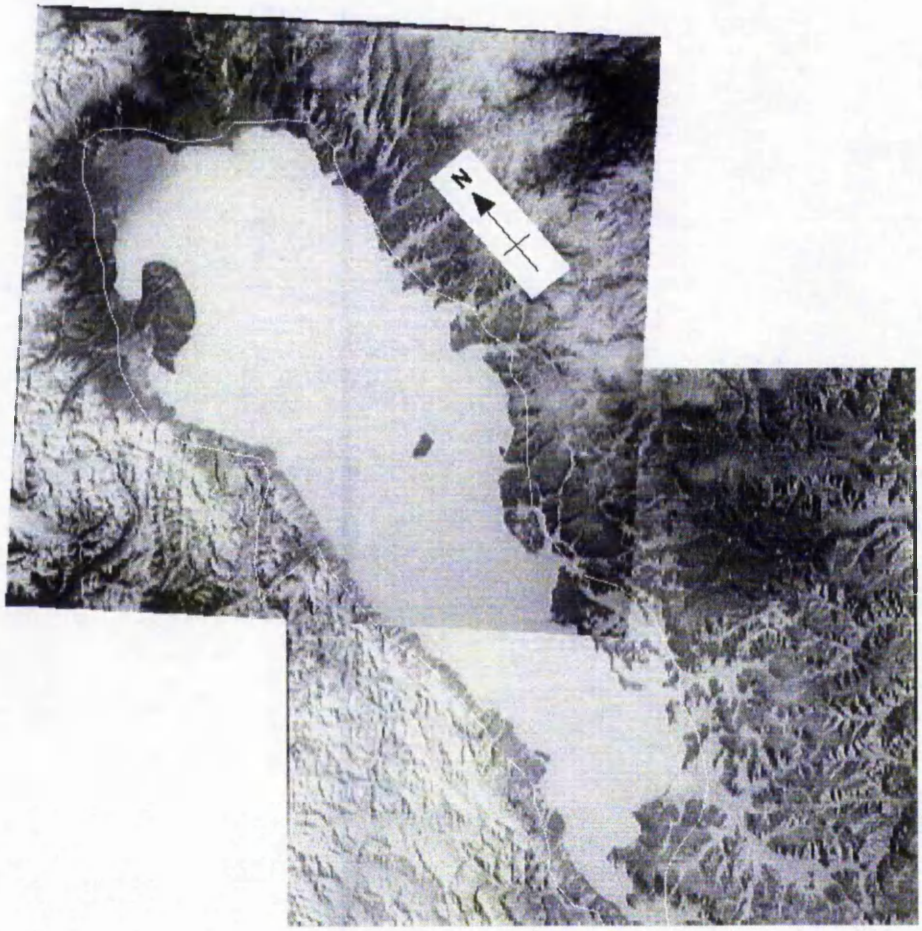

FIGURE 7.53: Russian Satellite Data

7.4.2 Environmental Constraints

The hardware and software suitable for Khövsgöl depends upon the availability of an energy source, the physical environment in which they are required to work, the hardware required on which to run the software, integration with hardware and software in other departments, and the personnel who will be required to maintain and run the system. This will also involve ongoing training in maintenance of the system, data input and processing.

Since the supply of electricity to Hatgal is unreliable, a UPS should be used in conjunction with the computer system, to allow a temporary supply of energy when the usual supply is interrupted. This would also protect against data loss or corruption following a power surge or 'spike'. Additionally, there are a number of power generating technologies what could be used to supplement or replace the GIS system power supply.

Aside from the static computing system which would be located at the National Park headquarters, it is proposed that data collection in the field may also take place directly into portable computers. The practicalities of this were tested using a combination of rigid and solar panels, GPS and two types of computer (Section 6.8). The rigid solar panel performed well, easily generating enough power to keep the Olivetti computer and a GPS charged, using rechargeable AA-type batteries. Carver *et. al.* (1993) managed to keep two 12 Volt dry cell batteries charged enough to power two laptops continuously. The solar panel was only used when recharging had to occur and it had to be manually slowed even in the shade to avoid charging to quickly. When placed directly in the sunlight, a charge far in excess of requirements was produced. This type of solar panel would be useful for the National Park headquarters at Hatgal or ranger stations around the Park. However, due to its rigidity, it would be difficult to transport on a regular basis.

During the second phase of research, flexible solar panelling was tested. This was a light, waterproof strip which could be fixed onto the back of a rucksack for continuous charging. It travelled well and could be used at temporary camps, bringing in enough charge to maintain the Kalidor PenPad computer and the GPS throughout the time in the field.

The Kalidor PenPad was a portable PC consisting of a rubberised tablet, into which was embedded a pressure-sensitive screen. Menus and software were activated using a 'pen' in the place of a mouse or keyboard to draw, select icons and write or 'type'. Text could be entered in a number of ways. An external keyboard was available to connect to the tablet in order to key in data directly. The pen could be used to call up an onscreen keyboard map, individual letters could then be selected as desired. Finally, the PenPad Windows software was able to recognise handwriting written across the screen using the pen, but this was slow and error-prone, although with time, the software would become more adept at handling the mannerisms of an individual user and the user would also learn to write in a manner which the software could more easily interpret.

The PenMap software would be very useful where it had been tied into the requirements of the GIS very specifically beforehand. If menus were set up so that, for example, someone conducting a survey was given a number of options or classifications for responses to each type of question, then the user could quickly select the required option with the pen. GPS readings could also be downloaded directly into the tablet to reference each household or set of data that the ranger wishes to identify.

However, the investment required to set up and run this type of mechanism for field capture would be extensive. The greatest proportion of this expenditure would be taken up by the training costs involved in the correct use of the unit and the development of associated software. It is this associated software which would contribute to the majority of its success as a data collection mechanism in the field. Moreover, although the Kalidor unit is very rugged, it would not be easily maintained, requiring more specialist parts than a standard PC. The units themselves remain costly at around US$4,500 each. However, prices are dropping and this sort of technology is becoming widely used in many industries where data collection takes place in field conditions (for example, Utilities management). Since they could be easily powered using environmentally 'friendly' energy supplies, they should not be ruled out. Further study would have to take place into the precise economics of the Park to determine whether they are an economically viable option.

7.5: Management

Any GIS will have to function within the existing management structure, and to a budget relevant to the situation. At Khövsgöl, costs will be kept lower by defining the system as PC-based.

Data represents over 50 percent of the projected costs for the project, and staff re-training and hardware are proportionally much less. Recent reports suggest hardware is likely to be taking an increasing share of the overall project costs since the lifetime of equipment becomes proportionally less as technological advances speed up. Data costs continue to decrease as more satellite information becomes available, more data are already produced in digital form, and automated digitising software decreases the time needed to manually enter map data.

A PC base calls for less personnel training and, using a graphical environment (for example ARC/VIEW), makes analysis easier to relate to and to complete. The integration of this hardware and software with that of the Ministry of Nature and Environment in Ulaanbaatar would mean that decision making could take place between managers on-site and those in the Capital in a more meaningful way. The feeling of remoteness suggested by Park officials could be overcome, as they would not be receiving instructions from Ulaanbaatar, but would be actively participating in the management process.

Overall a GIS or some other form of geographical database is important in order to be able to collate and analyse the large amounts of data that will be generated by monitoring strategies for managing the Park. Moreover, the changing role of Khövsgöl as a site for the conservation of genetic resources, provider of tourism and recreation services and promoter of rural development (Introduction) means that there is far greater potential for conflicts between users of the Park. Chapter 8 illustrates how tourism in the Park might be more effectively managed and how GIS can be used as a tool for decision-making.

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THE USE OF GIS IN TOURISM PLANNING STRATEGIES FOR MONGOLIA: THE CASE OF KHÖVSGÖL NATIONAL PARK

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A thesis submitted in partial fulfilment of the requirements of the Nottingham Trent University for the degree of Doctor of Philosophy.

March 1999

Volume 2

Chapter Eight

ANALYSIS AND CONCLUSIONS

Chapter Eight
ANALYSIS AND CONCLUSIONS

8.1: Introduction

The aims of this research were to analyse current management practices of Khövsgöl National Park, evaluate how a GIS might be used to aid in the decision-making process and finally, to define and collate information that would be required for a GIS. This chapter will integrate the discussions from earlier sections and suggest a management strategy for Khövsgöl that will help to address many of the conflicts that are taking place. An example of how the GIS could be used within the planning strategy is then presented, along with recommendations about its implementation.

8.2: Current Situation and Proposals

8.2.1 Environment

The environment in Khövsgöl is one that has been extensively influenced by mankind over a long period of time. Local people have been grazing their livestock within what are now the National Park boundaries for hundreds of years. With the designation of the region as a National Park, hunting has been banned (except for those species which are allowed in law, with appropriate permits, at certain times of the year). Meanwhile, the local economy has been devastated by political changes, leading to the closure of the Russian borders to trade. This has produced a situation whereby people have no option but to live off the land and are finding it increasingly difficult as their traditional sources of food (wildlife) are also denied to them. Additionally, some species such as bear and wolf play an important role within the local culture and traditions of the community. For example, their meat is said to be beneficial for health.

Although Bennett & Harper (1995) express concern over wildlife being traded with tourists or across the Chinese border, the author found no evidence of this in Khövsgöl. Compared to the Sayan mountains across the border in Russia, Khövsgöl has a relative paucity of wildlife. Any hunters who were interviewed, caught wildlife for their own family's needs. Of the tourist questionnaire respondents, only one undertook any form of hunting activity while in Khövsgöl and it is not known whether a permit was supplied for this.

A recurring theme throughout the community survey was the perceived increase in wolf numbers due to the restrictions on hunting and breakdown of organised trapping gangs (Section 3.2). This has left the numbers of wolves growing virtually unchecked except for those killed by illegal hunting expeditions. Many local people own guns and protect their herds by firing at wolves, the use of a guard dog, or by the attention of the family. This protection is achieved by shouting and making a lot of noise, or bringing livestock into an enclosure at night. Wolves are therefore restricted to the wildlife in the region or livestock available to them through lack of attention by a herder. If wildlife numbers are dwindling due to this, then one solution might be to effect controlled culling in the form of organised hunting parties. This would help to increase endangered species stock as well as encouraging traditional skills among the local community.

Many bird species are found in Khövsgöl due to the expanses of wetlands around the perimeter of the lake. Some of these wetlands could be affected by tourism. However, standard trails are cut into them each season by the movements of local people. This may degrade them to some extent, but as long as this traffic is kept to manageable levels and new tracks are not cut parallel to the old ones (increasing the area of disturbance), then this effect should be acceptable. Indeed, the flora and fauna of all areas of the lakeshore are dependent upon the impacts of man, livestock and wildlife to some extent.

There are many endangered species of plants and animals, some of which are useful to the local community. These are also what tourists want to see. Several respondents to the Visitor questionnaire (Section 7.3) indicated that they did not see as much wildlife as they would have liked, or expected. Efforts must be made to ensure that local people are able to gain enough food, i.e. remove the requirement for food to be supplemented by the hunting of native animals. One way this may be achieved is by providing some kind of employment in the tourism, or other, industry. Then it can be demonstrated that more money can be made from showing the animals and landscape to tourists, than from one meal.

8.2.2 Community

Local communities are having to adapt to a number of economic and social changes that are taking place. A sense of cultural and religions freedom has overtaken the region, leading to a revival in religious ceremonies and practices that can now be observed. A Shaman now frequently visits Hatgal and a new monastery has been built in Renchinlumbe. These aspects of culture are strong attractions for tourists.

However, some communities around the lake are less welcoming to tourists, in particular, a group on the eastern side of the lake and the community north of Dolon. These communities are recognised by other Mongolians as belonging to different ethnic groups. It is important to take note of the responses to the Community Survey in these regions as, although they may not be openly hostile to the presence of tourists, there would certainly be problems in siting tourist camps, or collaborating with the local communities. These groups were more concerned with the economic benefits of tourism to them than an attraction to the social benefits of tourism. This would almost certainly lead to some form of conflict between tourists and local people if these expectations were not met (Figure 3.9).

8.2.3 Economic

Local people have recently returned to a semi-nomadic pastoral lifestyle after forty years of partial sedentarisation. This has had a marked short-term effect upon the ecology of the region since people have moved away from Hatgal as jobs were lost. These redundancies have left a substantial proportion of the buildings in Hatgal empty and in a state of disrepair. Added to this is a lack of purpose among many of the young people in the region who have no herds of their own and no form of employment. The decline in the standard of living, experienced by local people, has been caused by the changing economic circumstances and the prevention of growth of local industry due to the restrictions imposed by the National Park. Since sustainable tourism implies a balance between economic, environmental and cultural issues, the quality of living in the National Park is of importance to any management plan.

The estimates of unemployment differ widely, depending upon their source. There seems to be a general dispute amongst local officials and local people as to the definition of 'unemployment'. Officials tend to argue that since every household has its own herds, then there is very little unemployment, as herding is a job (see Figure 1.14). Local people tend to feel that there are few job opportunities available and that their children (or other family members who do not technically own the herds) are, therefore, unemployed (15% employment). Unusually, the Hatgal Governor seemed to accept this view of unemployment, accounting for her figure of 15%, in contrast with the head of police in Turt, who felt that there was very little unemployment.

Tourism has a great potential in this region for a cross-section of the community to be involved in seasonal employment. However, the types of employment must be structured so as to be attractive to the male proportion of the population. Traditionally, tasks such as cooking, cleaning and sewing are undertaken by women (Section 6.6.9). If these jobs are offered, then it is likely that the women in a household would be required to undertake these tasks for tourists as well as working in their own *ger*. Opportunities should be created whereby more male-oriented tasks are generated; for example, construction and engineering, or production of local handicrafts.

Traditional skills in the production of handicrafts could thus be preserved and revived, encouraging an influx of materials to the region. Moreover, the production of locally-made crafts is an activity that could take place year round in conjunction with the seasonal employment of tourism.

Communities will also be subject to changes from a bartering/subsistence economy to working with people from other cultures and a market economy. Care must be taken so that traditional hospitality practices do not suffer through tourists not 'giving back' any resources. There are great expectations that the community will profit greatly from tourism in terms of the rejuvenation of the local economy. However, these expectations must also be reconciled with environmental issues.

8.2.4 Tourism

Before the region was designated a National Park, far more visitors did come, however there was no management structure in place in order to control impacts. Environmental issues were not of importance, whereas economic ones were paramount. To this end, trade with Russia took place across the lake, various industries were built up at Hatgal and Turt, swathes of forest were cut down from stands around the lake edge, in order to provide fuel for powering ships across the lake and also for the cooking and heating needs of local people.

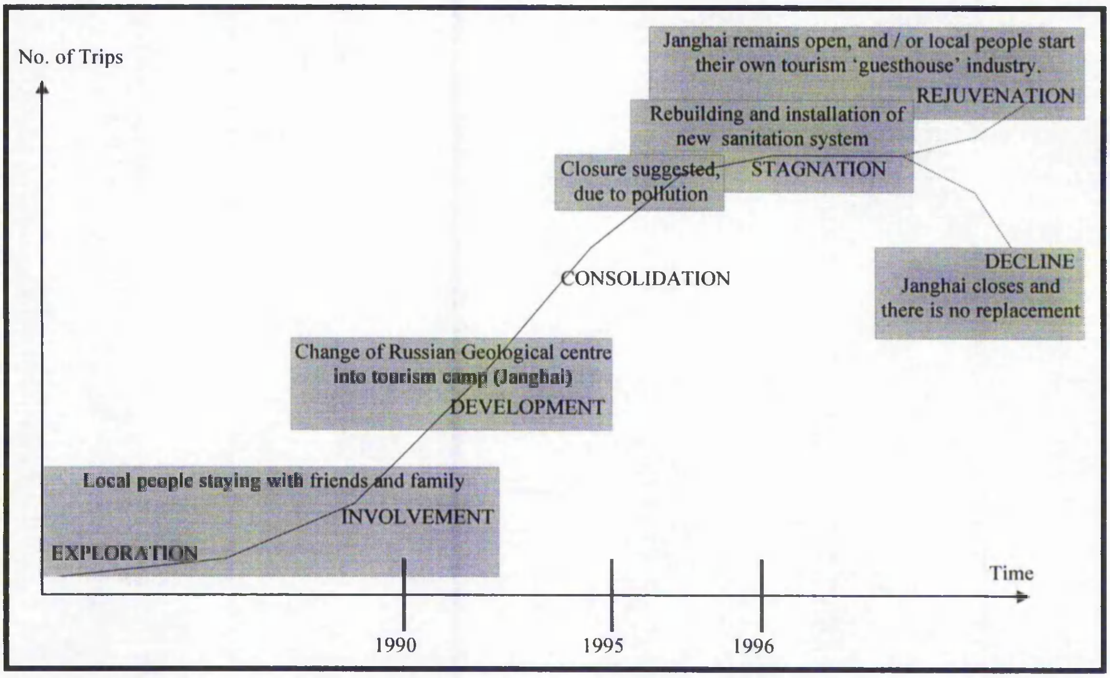
Developments along the lakeside were undertaken on the basis of economic or scientific motivation. Ironically, the scientific base that represented a Russian Geological Station (now the site of Janghai tourist camp) has contributed a significant amount of pollution to the lake, as a large amount of petrol was spilt there.

Since the cease of Russian influence in Mongolia and the change to a market economy, the numbers and origins of visitors to Khövsgöl has changed. A significant proportion of visitors came from the former Soviet republic. These numbers have now decreased and given way to domestic tourists (still representing the bulk of the tourism market) and foreign arrivals.

The accommodation and supply infrastructure for domestic tourists is gradually being curtailed. Janghai tourist camp remains the only permanent camp in Khövsgöl National Park which takes domestic visitors. The others have all been closed and new developments are strictly for foreigners only. This is likely to be due, in the main, to the inappropriateness of the sites on which they were located, or the inadequacy of their waste disposal systems, leading to pollution. Discussions are ongoing about the fate of Janghai, since their sewage facilities are inadequate and there remains an ongoing problem of the petrol contamination of the site.

These factors have pushed many domestic tourists and Russians into returning to the region as independent visitors. Some Mongolian visitors are able to stay with friends or relatives (VFR movements) and, therefore, are accommodated relatively seamlessly into the landscape. However, many of the others hire trucks and local guides, finding areas around the lake edge in which to fish or canoe. Domestic tourists (and indeed many local people) seem to feel that littering presents no particular problem. Perhaps this is due to their feelings of lack of identity with the changed role of the area as a National Park. Many local people and domestic visitors were observed discarding packaging. This was especially obvious along the Eastern shore of the lake, where copper cables and food packaging etc. were discarded along the side of the road.

Figure 2.4 illustrates the tourism lifecycle with respect to different tourist typologies. This theme is now explored further in terms of domestic and international tourism to Khövsgöl. It is important to recognise that the domestic and international markets are clearly defined in Khövsgöl, since only one tourist camp presently caters for domestic visitors (the other camps may be booked only by international tour operators). Prior to 1991, the domestic market was the only source of tourists to Khövsgöl as international visitors were not permitted outside Ulaanbaatar.



(Adapted from Butler, 1980)

FIGURE 8.1: Domestic Tourists

Domestic tourists (Figure 8.1) consisted mainly of people who had friends or family in the region and were able to stay with them. After 1990, the Russian Geological Station was converted to 'Janghai' tourist camp. This site had been the subject of petrol pollution by the Russians and although the spillage was covered with rubble, it is still leaching out into the lake. As a result of this, the site is the subject of intense scrutiny by the National Park authorities.

Should Janghai be closed permanently, then there would be very few facilities for domestic tourism in the region. One way this could be overcome is for domestic tourists to practise a kind of 'farm' or 'guesthouse' tourism whereby tourists stay with groups of local people who have made arrangements for them. This would also help to integrate groups of domestic and international tourists, as they could all share similar accommodation. This is currently happening to some extent, as domestic tourists now tend to be family members of local people and they stay with them.

Although domestic tourists make up a small proportion of the market, their numbers are in decline. This is due to 'artificial' pressures such as proposed new developments of the region, rather than 'natural' pressures, such as social changes and changes in destination image. International tourists, however, are increasing in number and changing in type. Before 1990 (Russian withdrawal), Mongolia was a closed country. Occasionally, journalists stayed in Ulaanbaatar, but were not permitted outside the city limits. This is why Ulaanbaatar is so clearly centralised, - a Westernised facade against the Mongolian ethnic backdrop. Explorer tourists ventured in all directions after 1990 and found themselves in regions where foreigners had never been seen.

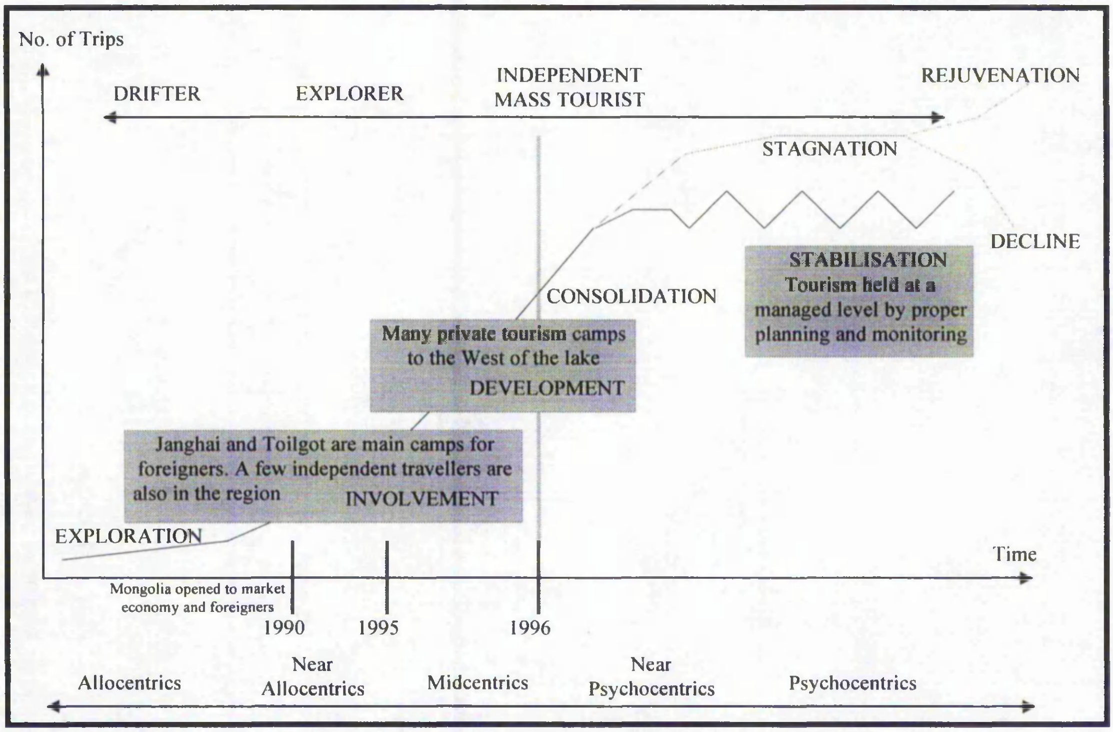
Khövsgöl has a short tourism period; between snow melting and autumn falling, there is a gap of about two months. Thus, development appears to take place in stages, from one year to the next, more tourism infrastructure is built in zones. Tourists either travelled independently, by bicycle, walking, or buying horses and riding them, or they stayed at Janghai.

Local entrepreneurs, seeing visitors arrive by plane at Mörön, began to capitalise on this potential trade and built *gers* and huts for tourists to rent, in strategic positions along the lakeshore. By limiting accessibility to foreign groups of tourists, through recognised tour operators, a selection process evolved whereby the drifter and explorer types of tourist were screened out. In some cases, they are actively discouraged, as they are seen by the National Park and administrative authorities as being difficult to monitor, having little money and a potential danger to the reputation of the region should something happen to them.

In reality though, is this actually the case? In many instances, those tourists who had no money impacted very little upon the environment and tended to have closer relationships with local people than those undertaking organised tours from one of the tourist camps. Several households that were interviewed commented on previous tourists who had stayed with them and participated in their daily life, helping them with essential chores such as grass cutting for the winter. Although these encounters are closer than those forged through organised tours and, therefore, may be thought of as having the potential for greater cultural influences, it seems the case that these are the sort of encounters that local people have expressed a desire to maintain between themselves and tourists. Thus, these encounters tend to leave a positive impression with local people, rather than a neutral or negative impression caused by disinterest or lack of empathy on behalf of the tourists from camps.

With no guiding structure or information available at the tourist camps, visitors are not encouraged to understand the customs and culture of local people and are, therefore, at a disadvantage. To date, Discovery Expeditions has made some effort to address this problem, by producing a local 'guide' giving information about the local community and environment in order to provide some framework upon which visitors can build their knowledge. Additionally, the governor of Hatgal has made available building space which is intended to be used as a visitor centre, from which information about the region can be distributed.

In this manner, the region has already reached the 'Independent Mass Tourist' status in the continuum (Figure 8.2). These groups tend to be of the near-allocentric to midcentric range. The only explorer types who are actively encouraged in the region are those belonging to scientific expeditions such as Discovery Expeditions. These groups are very closely monitored regarding their position along the edge of the lake and keeping to Park legislation but, after this, have a good degree of freedom to carry out scientific trials and inventory flora and fauna.



(Adapted from Butler, 1980, Cohen, 1972 and Plog, 1972)

FIGURE 8.2: International Tourists

However, the eastern shore of the lake holds some spectacular views, as it looks across to the steep western mountains. Additionally, its shores are much larger and shallower - being composed of fine sandy material rather than the shingle found to the west (Figure 1.12). The area is serviced by a dirt track along which several vehicles a day can be seen, either going to or coming from the direction of Hankh. Although there is a prison workers' camp some distance along this road, there are great opportunities for tourism service provision in this region, both before and after this section of the Park. A number of suitable areas have been indicated by the Hankh rangers and many groups of local people have indicated their interest in providing tourism services, such as selling dairy products, cooking, cleaning, and selling provisions.

It is likely that the first entrepreneurs who selected suitable sites for their tourism camps, were followed by others who located their camps close to these, in competition. The historical tourism route had Purevdorj's camp located 2km north of the original Janghai camp (for domestic tourists) on a projection of land into the lake, close to a nearby inlet of water. This region is particularly spectacular for birdlife, as the water basin is bordered by watery marshlands. Subsequently, in 1995, other Mongolian companies built smaller complexes of wooden cabins or *gers* between Purvdorj's camp and Hatgal. The closest camp to Hatgal is partly owned by the governor, and is situated only 1km north.

Only two organisations have managed to place a camp further north than Purvdorj - neither of which are permanent, both intrude onto valuable winter grazing used by herders who migrate across the mountain range from Renchinlumbe. However, it was expected that during 1997 and later years, Discovery Expeditions would move sites to explore the more northerly areas of the Park. It is unclear whether these herders are deemed to have the same 'rights' in the region as those people who are present during the summer, or those present all year round. This is an important consideration for the management of tourism, in that local people involved in management discussions during the summer months may not be representative of the community present in the Park during the winter months (these people being located out of the Park during the summer and therefore difficult to contact for their opinions).

It is argued that development on the western bank of the lake has evolved through a series of cause and effect changes, rather than in a planned manner, and has depended, in the main, upon the success and marketing policy of earlier entrepreneurs. For this reason, tourism camps have not been established on the eastern bank of the lake, despite there being sufficient labour resources and access, as well as suitable physical sites.

This chapter will show how tourism could be developed on the eastern bank of the lake, in a planning framework which will allow the main 'conservation' goals of the Park to be followed, whilst also making provision for monitoring to ensure preset standards are being maintained (Section 4.3).

Degradation of the Park so far has been limited mainly to the western shore in the form of marked tourism campsites, an increase in litter and unauthorised campfires. Of the limited sample of tourists met, independent tourists of Western cultures tend to have a much greater awareness of environmental issues and respect for the local ecology than do their Asian counterparts. Evidence of the Russian and domestic Mongolian tourists met, several instances were encountered where the tourists left unauthorised campsites strewn with litter and visible campfire remains. Is this due to the perception of the region as 'remote' by Westerners and 'local' by Asians?

Main tracks are (at worst) subject to an increase in traffic, and many are being positively improved by gravel coatings, preventing the breakdown of the land into mud and confining vehicular activity to the road surface. Individual 'campsites' are discouraged under current National Park policy, but the main tourist camps are owned by private companies which, therefore, have a strong interest in maintaining them. Therefore, it is unlikely that 'neglect of campsites' could be feasibly used as an indirect management measure.

Information dispersal is currently being utilised as a method of encouraging tourists to visit Hatgal. Roadsigns were erected in 1996 and indicate sites of interest to tourists, such as the hot showers, bakery and medical centre. These signs are in English, perhaps reflecting the linguistic origins of the greatest contingent of tourists. These signs have not yet been placed outside Hatgal, although there is the possibility that they could highlight areas of interest all around the lake. The area is advertised mainly by the companies which operate the tourism camps. In one sense, this responsibility is removed from the National Park Service, although it contributes nothing to the destination image as a Protected Area - rather, it concentrates on the attractiveness of the region and potential activities and holiday experiences that can be enjoyed. The National Park Administration is slow to provide any sort of impact education. To date this has been tackled more by the Governor of Hatgal in the provision of a visitor centre for Hatgal. It is hoped that this centre will feature the crafts of local people, as well as providing a central point where visitors can learn more about the region.

The current policy regarding access to the Park considers charging fees on a differential basis, whereby domestic visitors are charged 250 tugriks (approximately 50 cents) per night, and international visitors 1000 tugriks (approximately US$2). This creates problems with domestic tourists living just outside the region, feeling they have a right to enter to see family and friends; and also with international visitors who do not enter the Park via the main gate.

These indirect measures are precise tools, which are unlikely to make a strong impact upon how tourism affects Khövsgöl - at least in the short term, while management of the majority of tourist camps remains in the hands of private companies. For the managers of Khövsgöl, their best hope is to regulate the private companies themselves through effective monitoring of the ecological and social environment, and acting upon this, backed up by strong legislation. The feedback loops illustrated in Figures 8.4 and 8.5 show how this data could be utilised in a management framework and effectively curb excessive or inappropriate development as soon as negative impacts are recognised. The success or failure of this system, depends primarily on the sensitivity of the monitoring mechanism.

More direct forms of management include enforcement. Surveillance of unofficial campsites and visitors was very strict during 1995. In this year, there were relatively few tourists compared to 1996 and so, monitoring their movements and reclaiming Park fees were only hindered by language barriers. Other methods that have been discussed, are zoning and restricting use intensity and activities. The main zonation considered in the current management plans includes Special Protected Areas (SPA's), which are regions of important ecology that visitors and local people should not enter. Unfortunately this classification suffers from lack of publicity and there are no barriers or signs to alert people.

As it stands, there are no limits placed upon the number of entrants to the Park, although, strictly, permission should be obtained from MNE before visitors attempt to enter the Park. Tourism camps are owned by private companies and a percentage of their profits go to the National Park. By limiting the number of people, this would decrease the amount of profits gained at the end of the tourism season.

There is no strict reservation system for the Park itself, although the tourism camps operate their own restrictions and use or access is not rotated from year to year. The MNE have a short guidebook in Mongolian, detailing policies about what activities can or cannot be undertaken. This falls loosely into the category of 'what is sanctified by legislation'. Current environmental laws prohibit the hunting of certain animal species between stated times of year. Thus, in effect, activities in the Park are already restricted.

Camping by unaccompanied visitors, not attached to any tour operator, is frowned upon and discouraged as far as possible without actually fining people. Additionally, the police in each of the administrative districts surrounding the lake require registration at the capital of each. For tourists crossing several boundaries, this is impractical, and they may also be unaware of these rules.

8.2.5 Technology

In Chapter 3 it was shown that the LAC or ABC management plans were more suited to the management of Khövsgöl as a conservation and tourism resource than was a strict management-by-objectives approach. Additionally, a GIS was able to assist managers at a number of levels. Firstly, to store, manipulate and analyse inventory data from different sources and identify particular areas, which may be subject to use conflicts. Secondly, to help predict new areas for development to take place. Thirdly, to model proposed developments to identify potential areas of weakness or conflicts. Finally, to integrate monitoring data for comparison against standards and to determine the degree to which these are surpassed or underachieved.

The researcher proposes a modification of the LAC and ABC management plans, in conjunction with a GIS to help manage and monitor the Khövsgöl National Park. As outlined in Chapter 1, data sources include the yearly expeditions to the Park, historical data found in journals and reports and satellite data. Although some satellite data was collated several years ago and may not have the best resolution and may only give a general overview of the region, there are potential funding opportunities for more precise data in the future. Further, periodic interviews or questionnaires should be undertaken with local people, in order to determine how their responses differ historically and whether there are particular issues or concerns that the National Park need to tackle.

In addition to all of these sources of 'collected' data, there is scope for 'Expert Knowledge'. This is where the GIS operator or manager makes decisions, or weights data according to his or her own experiences and knowledge of the Park. This is the fundamental argument against centralised management of Mongolia's National Parks, from the Ministry of Nature and Environment. Local rangers working and living in the Park are far more aware of the importance of issues affecting the region, and can make decisions according to the needs and wants of local people and the environment, rather than implementing a generalised policy. This expert data may also be recorded in some way within the GIS database so that this local knowledge is not lost when personnel move away from the Park area (Dow, 1994).

Moreover, by linking the National Park GIS with the database at the MNE, a communications network would be established, allowing the MNE to advise upon direct management issues; post directives that were relevant to specific areas of the National Park, and assess monitoring programmes. Experiences may thus be shared by managers of all of Mongolia's National Parks and Protected Areas, thereby creating a network of contacts that bypasses the traditional hierarchical system.

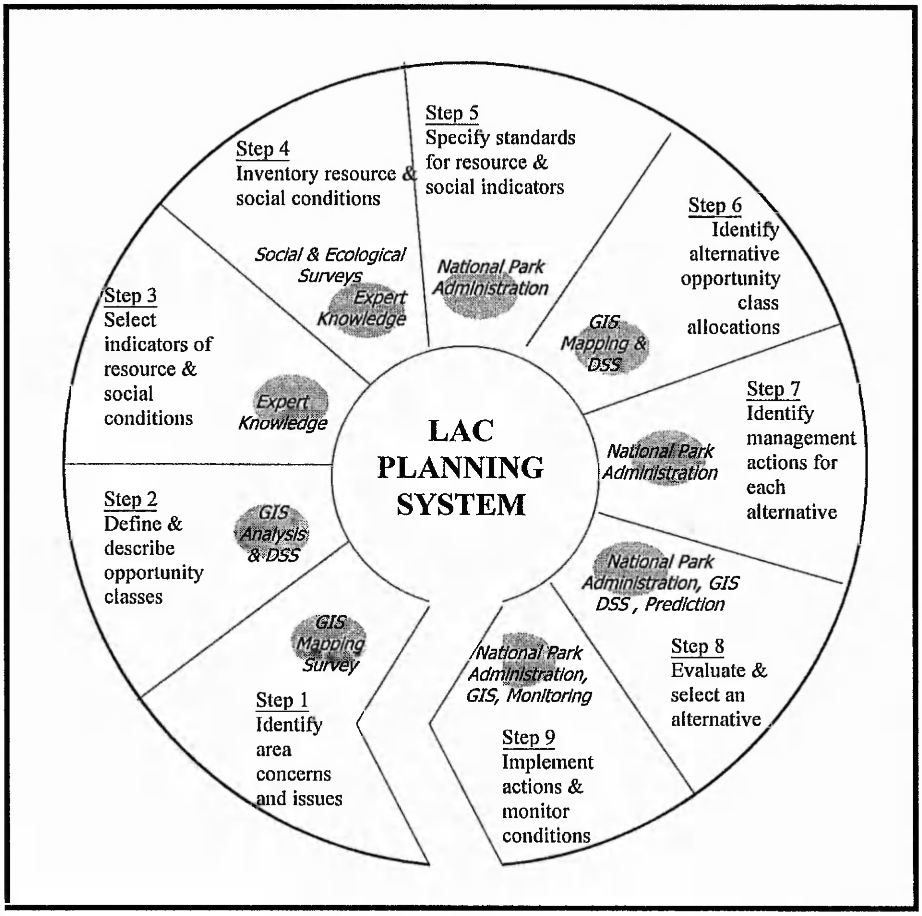
The current status of computer hardware in Khövsgöl is a number of stand-alone (not networked) PCs, belonging to the Governor of Hatgal and the National Park headquarters. These would be sufficient to run a data manipulation and presentation program such as ArcView. More powerful machinery may run Arc/Info, although there is then the introduction of a problem of who retains the current database. It would be sufficient in the short term, for data transfer to involve the physical carrying of a disk or storage medium, by air, between MNE and the National Park headquarters. However, this would only be possible on a regular weekly basis during the summer months, as the winter weather would impair the frequency of flights.

Should this prove successful, then a semi-permanent or permanent link could be maintained through the use of Mörön's satellite communication dish. There are already telegraph poles linking Hatgal and Mörön and it is conceivable that this cabling could be put to some data transfer use, if the lines were properly maintained. Due to adverse weather conditions and improper tensioning of the cables, these lines are often down, cutting off telephone services for Hatgal and surrounds as well as, on occasion, Mörön itself.

8.2.6 Management

Other important management considerations must be the inclusion of local people into the decision-making process. There is clearly a vast division in communication and responsibility for the National Park. Both the local National Park administration and the Governor of Hatgal describe how little exchange of information and decision-making takes place between them. Although some groups of local people are meeting, there is a general lack of impetus or belief that their opinions count and can make any difference. Stronger links need to be forged between the different aspects of the local community in order to present a strong decision-making body in terms of influencing tourism management.

Figure 8.3 shows how the LAC plan could be used as a basis for a management plan in Khövsgöl. It must be understood, however, that it is difficult to base this plan in legislation without Mongolian legislation being more strictly defined. Thus, goals cannot be planned because the basis for them is weak and unclear.



(Adapted from Hendee *et al.* 1986)

FIGURE 8.3: Limits of Acceptable Change (LAC) Plan.

Step 1: Identify area concerns and issues.

Local concerns and issues were identified through RRA (Section 6.6.1) and the Community Survey (Section 6.6.5). The National Park identify a number of concerns which include the potential of mining in the region, the impacts of tourism (both pollutive and social), the conservation of animals and plantlife and the problems of hunting (both a decrease in species and the sales of protected species to tourists). Local people are concerned about the possibility of pollution of the lake by tourists, the availability of employment, the increase in the numbers of wolves and the availability of food.

Step 2: Define and describe opportunity classes

From visitor responses, the most important motivation for visiting the region is the natural environment, which includes the flora and fauna. Interaction with local people is a crucial part of the visitor experience. Although this is not a strong motivating factor in itself, once there, tourists regard interaction with the local community as an integral part of their visit. Lower down the list come activities as a motivating factor (Figure 7.75). Though most tourists wanted to undertake some forms of activity, they were also unwilling to tolerate intrusion upon the 'natural' or 'scenic' value of their experience.

Therefore, a number of recreational groups can be defined ranging from those visitors who are seeking a wilderness experience (Hammit & Cole, 1987), to those who are engaging in activities that are tolerant of other users. The Park should be split into facets, which represent where different parts of the Recreational

Opportunity Spectrum (ROS) could be located (Clark & Stankey, 1979a). A GIS could be used to help analyse and model the landscape to determine the locations of each recreational opportunity.

Step 3: Select indicators of resource and social conditions

Resource and culture indicators are defined by the results of the Community Survey. People's willingness to meet tourists and their perceptions of the Park may indicate changes in attitudes over time. Natural resource indicators (defined by Krumpe, 1985) should be suggested by biologists in order to highlight adverse changes in the geoecology of the region due to development of the tourism infrastructure. Local experts should define these indicators.

Step 4: Inventory resource and social conditions.

There are several sources. Firstly, the Russo-Mongolian expedition has been taking place over the last twenty years studying primarily wildlife and botany of the region. This might be useful for a general historical view. Secondly, an American expedition has been visiting Khövsgöl in order to study the freshwater lake. This may give an indication of pollutants, and baseline organisms that are found in the lake, and nowhere else on Earth. The lake is likened in this respect to Baikal, where a number of unique species have been recorded. Thirdly, Discovery Expeditions conduct a yearly series of projects, mainly concerned with wildlife and botany, in some areas of the region. This research presents an inventory of the socio-cultural conditions (Section 7.2.6). A GIS could be used to store this information and help managers integrate and manipulate it.

Step 5: Specify standards for resource and social indicators.

This must be a definition made by the National Park authorities and depends to a large degree upon the major goals of the Park.

Step 6: Alternative opportunity class allocations

The ROS should be redefined to suggest alternatives if changes in the geoecology of an area require some form of control over activities. A GIS can be used to model potential changes and 'what if' scenarios, to help predict the results of changes in opportunity class.

Step 7: Identify management actions for each alternative.

By selecting appropriate measures from Table 8.1 to influence visitor impacts, standards can be maintained.

Step 8: Evaluate and select an alternative.

The GIS can be used to model the predicted effects of a particular management alternative upon the geoecology of an area or visitor patterns.

Step 9: Implement actions and monitor conditions

Finally, a monitoring strategy should be set in place in order to keep track of the changes effected by the management alternative. A GIS can help to model this to ensure that standards for that particular area are being achieved.

Additionally, in order to take greater control over tourism developments, any tourism company should have to submit an Environmental Impact Assessment (EIA) to the National Park authorities, and pay any fees or dues. The benefit of this system would be to identify quickly if a company's original suggestions were outside the policies of the National Park, and thereby prevent any misunderstandings caused by errors in the initial identification of a potential site. This also confers greater information to MNE, who may be approached in the first instance and who will handle the financial obligations of proposals. Managers would be able to identify quickly the area of interest and view how this falls in terms of an 'ideal' site (Figure 8.4).

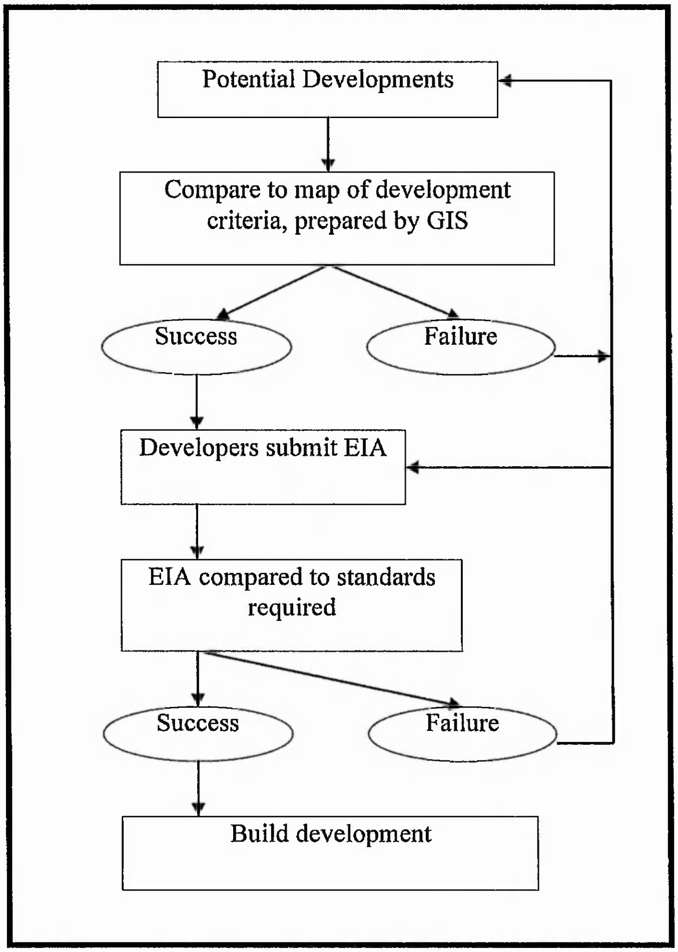


FIGURE 8.4: Development Evaluation Feedback

One potential drawback to this is that several companies vying for sites in a small area may find themselves restricted if one EIA is accepted over the others. A negative response may find one company being favoured over another in terms of monetary benefits to the National Park, or its ability to influence the decisions of managers. A case of 'not what you know, but who you know'. Alternatively, and more positively, the companies would be forced to produce very clear EIA's and undertake perhaps more investment in the locality (on both an environmental and social level) than they would otherwise have done (Jenkins, 1982). This is to the benefit of the region and ultimately the National Park Service itself.

By mapping all areas which conform with each specification and then overlaying them, a map can be generated which presents all areas in the region which fulfil all the criteria. Obviously, if no areas are found that are suitable then the search must be widened - either by discarding some criteria, or weighting them so that some are more important than others.

Depending upon environmental quality standards, these criteria may be relaxed or tightened, as monitoring reveals how successful management strategies are at achieving required standards. Thus, when standards are poorly achieved, criteria for new developments are tightened so that fewer developments, with high quality EIA's can invest (Figure 8.5).

Similarly, this feedback loop can also be applied to numbers of tourists. If the monitoring system is precise enough to allow the identification of factors limiting achievement of standards, then only those factors need be affected.

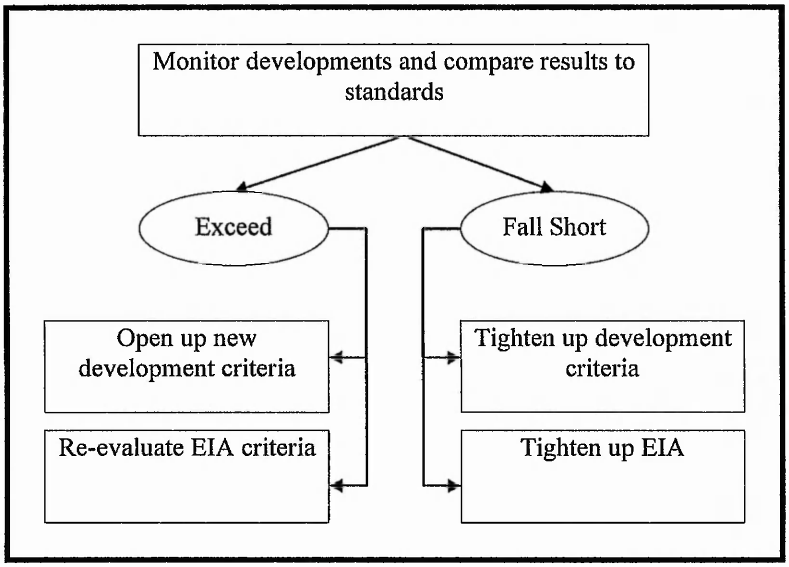


FIGURE 8.5: Monitoring Feedback

This is a primary level of management - affecting whole developments. Within this, management can be fine-tuned to resolve problems at a much finer level of detail (Table 8.1). Each component can be modified to change small features of the tourism or environmental landscape.

INDIRECT	DIRECT
Physical Alterations Improve main track into the Park and around the lake or neglect it.	**Enforcement** Increase surveillance for non-payment of fees Impose fines for non-payment of fees and illegal camping
Information Dispersal Advertise area attributes (international marketing) Identify surrounding opportunities Provide minimal impact education. Advertise Park boundaries and areas of special protection.	**Zoning** Separate visitors by experience level Separate incompatible uses
Economic Constraints Charge constant fees Charge differential fees	**Rationing Use Intensity** Limit use via access point - Ranger on duty at entrance Rotate use Require reservations
	Restricting Activities Restrict type of use Limit size of group Limit length of stay Restrict camping practices Prohibit use at certain times

(Adapted from Hendee *et al.*, 1978)

TABLE 8.1: Visitor Management Strategies for Khövsgöl

Development of the east shore of the lake would be only one objective in a selection of others, all helping to move some way towards achieving the National Park goals - those of conservation and sustainable development (Jurgens, 1993). Ultimately this will involve a balancing mechanism between the environment, economic and social needs. This may be illustrated by Figure 8.6 as the ideal situation of goal achievement, surrounded by a number of different objectives - which can be grouped into Environmental Conservation, Economic Development, and Maintenance of the Social and Cultural Landscape.

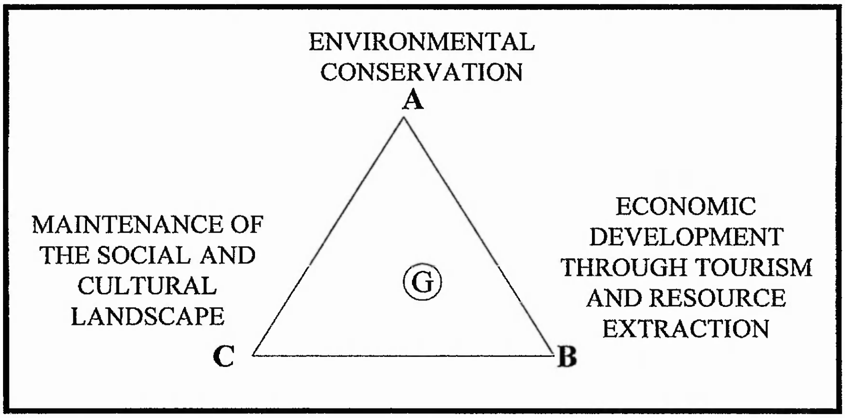


FIGURE 8.6: Balancing Elements to Achieve Goals

The importance of each of the three will differ in the pursual of goals, depending upon external factors such as the time of year and climatic conditions. Similarly, it must be recognised that a change in the **status** of one of the three, perhaps through legislation, may strengthen or weaken its position with respect to the other two and, therefore, it will exert a greater or lesser influence towards the goal. Thus, the goal may be moved further away from the others. The current situation in Khövsgöl may be described as Figure 8.7, where the objectives of **B** and to a lesser extent, **A**, are being achieved, while **C** is not considered.

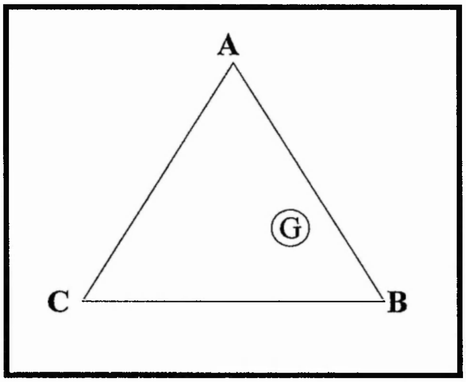


FIGURE 8.7: Effects of Imbalance Between Elements

A third dimension may be introduced to represent some measure of efficacy at targeting objectives to achieve goals. This is indicated by the dotted lines appearing in Figure 8.8. A fourth dimension may also be considered which may be used to represent changes occurring over time.

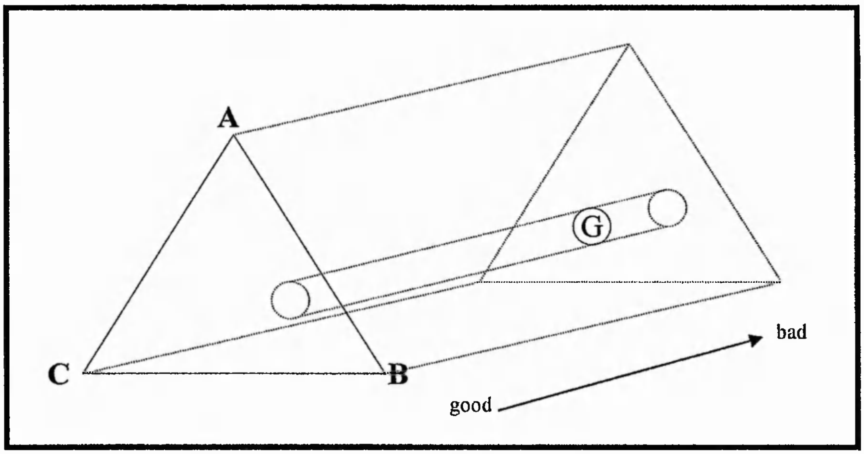


FIGURE 8.8: Efficacy of Targeting Objectives to Achieve Goals

The efficacy of targeting can be determined by a comparison of indicator, with standards set. To increase the efficacy, objectives must be refined more to explicitly approach goal achievement. Thus, Khövsgöl has goals of conservation and sustainable development.

This is due, in the main, to fundamental legislation of the Mongolian Government, where the push for gaining international funds or co-operation through business is all pervading. As has already been mentioned, the highest priority is placed upon resource extraction and tourism; although some mention is made of making proper provision for the care of the environment, this makes no distinction between Protected Areas and any other landscapes.

What is needed, is a distinction in the law, which observes 'Protected Areas' (as designated by the MNE) as special landscapes, which are subject to specific laws.

This then prevents law becoming more complex, while giving MNE managers the power that they require in order to set and manage goals more efficiently.

In truth, however, the greatest omission in both law and management is the total disregard of any social or cultural issues. Current management fails to credit local people and their traditional working practices with any kind of responsibility for the character of the landscape. This is quite a dangerous assumption to make - as the particular patterns of grazing that livestock makes upon the land shapes the varieties of plants that live there - altering the habitat. By changing the way local people live in a region, there will ultimately be some changes in the landscape, which may not necessarily honour the National Park goal of conservation.

Similarly, it is recognised that some practices may be detrimental to the goals of the National Park, but that these do not warrant the complete removal of people. Indeed, Hendee *et al.* (1986) stress the importance of a management plan which alters over different spatial areas, so that unnecessary rules are not applied to regions which are not experiencing problems. Thus, the role of the GIS allows these kinds of distinctions, as a GIS is fundamentally a spatially-referenced database. IT (Information Technology) makes it much easier for managers to define, monitor and keep track of small areas of the Park. This avoids having large regions deteriorate or become reclassified due to smaller problem units within them. It is far more sensible to bring areas up to a better standard, than to allow them degrade to a lower classification.

It could be argued that the construction of a digital database for Khövsgöl is an excessive cost, for a region that has little budget to spend on management. Revenue for the management of the Park comes from a number of sources, the MNE, external aid and the tourists themselves. In estimating revenue from tourists, there are a number of sources which must be considered. Firstly, a major proportion of Park revenue is generated by entrance receipts. Foreign visitors pay US$3 per night (1,500 Tg in 1995) whereas domestic visitors pay US$1 per night (500 Tg in 1995). However, the gate to the National Park stands South of Hatgal and is not permanently manned. Therefore, a significant number of domestic and independent visitors are able to enter the Park without paying the appropriate fees. Moreover, visitors who enter the Park from the direction of Renchinlumbe to the West, or across the border with Russia, North of Hankh, also escape the payment of Park fees. Although the Park boundaries cover these districts, the Park management's influence is further removed from these areas. Therefore, the majority of domestic visitors (who can be termed VFR - visiting friends and relatives) or independent (as they do not stay in fixed camps), evade paying Park fees, losing this income to the National Park Authorities.

Secondly, Park revenue is gained through the payment of taxes by the tourist camps. This equates to 10 percent of profit made. What is not clear, is exactly how much this is likely to be. Camps can easily increase wages and other outgoings in order to account for much of the profit, and so, only a small amount may be due to the National Park at the end of the year. Thirdly, revenue may be gained through the collection of fines and penalties for inappropriate behaviour in the Park. Fourthly, revenue may be gained from the granting or sale of permits – for hunting, fishing and the cutting of wood, etc. Finally, the Park gains finance from funding bodies. The MNE contributes ongoing funds. UNDP and UN Biodiversity Project may also contribute small grants, aid or other resources.

Economics of Tourism - Estimates for 1995

Number of Visitor Nights

	Foreign Tourists	Av. # Nights	# Visitor Nights
Toilgot	60	5	300
Janghai	500	7	3500
TOTAL			**3800**

	Domestic Tourists	Av. # Nights	# Visitor Nights
Toilgot	0	5	0
Janghai	1500	7	10500
TOTAL			**10500**

	Independent Tourists	Av. # nights	# Visitor Nights
	112	5	560
TOTAL			**560**

Gate Receipts

		Park Fee / night	Receipts (US$)
# Foreign Visitor Nights	3800	US$ 3	11400
# Independent visitor nights	560	US$ 3	1680
# Domestic Visitor Nights	10500	US$ 1	10500
TOTAL			**23580**

This revenue comes from visitors to only two tourist camps on the western shore of the lake. There are now upwards of 10 camps in that region alone and planned development on the eastern shore.

TABLE 8.2: Economics of Tourism

Not all of these figures are quantifiable. National Park Authorities themselves do not have information regarding the number of visitors to the Park, and the amount of revenue gained through the payment of taxes is restricted, being in the interests of neither party to have it divulged. However, some attempt can be made to quantify revenue from gate receipts for 1995, as some tourist figures were made available by the two main tourist camps in that year. From this, a table can be drawn up to estimate the amount of revenue gained from tourism in 1995.

The total revenue (Table 8.2) that can be estimated from gate receipts in 1995 is US$23,580. This estimate is derived from the numbers of visitors to the two main tourist camps on the western shore of Lake Khövsgöl. Since there has been a large amount of building activity on this side of the lake since 1995, then it can be reasonably assumed that the total revenue is now substantially higher.

The manager of Janghai predicts that 25,000 people will visit Khövsgöl in 1996. This estimate is important for a number of reasons. Firstly, he doesn't specify whether this is Khövsgöl aimag or Khövsgöl National Park. There is already a great deal of difference in numbers between the two. Purvdorj mentions that he has five camps with upwards of 1,000 visitors a year between them. His camp in Khövsgöl, on the western shore of the lake, accounts for 60 out of the 1,000. Secondly, even within Khövsgöl, a huge amount of development has been taking place along the western shore north of Hatgal. In 1995 there were two fixed and two semi-static camps in this area. By 1996, the numbers had increased to five fixed and three semi-static camps. Thirdly, some of these 25,000 people are travellers, ie. they are independent visitors. Some may cross through the Russian border in the northern region and not be stopped or informed that they are entering a National Park, or informed that they have to pay Park fees. Additionally these 'travellers' may include movements of Mongolians into the region who may be trading. Finally, it may also be some measure of the amount of domestic tourism to the region. Given that Janghai is the only remaining tourist camp in Khövsgöl National Park which offers accommodation for domestic tourists, then it is clear that a huge deficit of bedspaces is expected.

However, if 90 percent of domestic tourists are staying elsewhere, why is there no evidence of them in the Park? During 1996, in conducting the community survey around the circumference of the lake, relatively few domestic tourists were met – certainly not enough to be representative of the 25,000 quoted. At Naadam in Turt, the celebration was composed of local people. The researcher and team were the only outsiders, barring the traders who had travelled from Ulaanbaatar. Perhaps 25,000 is an overestimate. A number of Russian and Mongolian fishing groups were met. The quality of their camp craft was poor and they were observed leaving litter behind. However, independent tourists do represent a substantial part of the tourism spectrum here.

From this, it can be observed that the estimate of US$8880 for the construction of a GIS in Khövsgöl (Table 5.2) is reasonable, considering the amount of revenue that the Park is likely to gain through entrance fees. However, it's economic viability is strongly influenced by the efficacy of the National Park Authorities in collecting these fees. Ineffective monitoring of more Northern and Eastern areas of the Park may well allow a significant number of visitors to gain entrance without paying.

8.3: Example

This scenario explores the potentials of the east coast of the lake for tourism development. It shows how, using GIS, this scenario can be modelled within the confines of the LAC management plan. This is also illustrated in an online demonstration contained in the data disk (Appendix M). For this example, the aim of the work is 'to identify areas of the east coast of the lake that are suitable for tourism development'. Step two in the LAC strategy is the specification of opportunity classes. In this instance they might be satisfied by a spectrum ranging from wilderness experience, birding, botanical and photography experience, walking or cycling experience, visiting local people, horseriding or travel by jeep. Potential sites for each of these classes should be suggested.

Following this, the Community Survey, visitor surveys and biological data should be consulted in order to define indicators against which, change can be determined and measured. Data about the region should be collated and input to the GIS to produce a baseline set of data. To achieve quantifiable results from the analyses, standards need to be set which identify an area as 'suitable' or 'unsuitable' (Table 8.3).

Community

1. More than 80% of the people in a 2km radius would like to see tourism *(establish a need and labour base)*
2. More than 50% of the people in a 5km radius would like a job in tourism *(establish a need and labour base)*
3. There are more than 5 surveyed families within a 5km radius, willing to sell or trade goods and services *(establish a need and labour base)*
4. There are fewer than 20 surveyed families within a 5km radius *(overcrowding is not a problem, not taking valuable resources)*
5. Not winter grazing or important grazing used by local people

Environmental

6. Slope is less than 2°
7. >50m from the nearest watersource
8. Not on marshlands
9. Not in habitat of protected plants
10. Close to existing road system
11. Good views/sandy beach
12. Not in Special Protected Areas

TABLE 8.3: Development Criteria

Other conditions might include camps not being in the line of sight of each other, or no two permanent camps within 2km of each other, nor upstream of a family group.

The GIS should be used to model areas of the east of the lake which fulfil certain criteria, while being able to support the ROS that are required. As well as tourist camps, other methods of providing tourism accommodation can be explored. From the responses to the community survey in the east side of the lake, it may be suitable for groups of local people to offer a *ger* or wooden house for the use of tourists (independent international and domestic). Tourists can move from group to group, and thereby see much of the Park. This also links in the social (C) aspects of the management objectives, as well as A and B.

In order to achieve this, some of the issues and concerns raised in the LAC plan must be confronted. Management may decide upon some rules or guidelines to help alleviate some of these and to reduce conflicts.

1. *Problems of registering independent travellers with the Police in all the sum they enter.*

It might be acceptable to make the National Park a registration district in itself. This would entail visitors making one registration and National Park Headquarters could then notify the police in all seven bordering *sum*. Alternatively, registration at the Park Headquarters could cover all areas in the National Park. Should tourists venture outside the Park, it then becomes their own responsibility to get the appropriate police registration. This may encourage tourists to remain within the Park, thus contributing more fees. Additionally it may discourage those travellers who have little money and just wish to explore the countryside to stay outside the Park. This would be logistically feasible within Khövsgöl, as the Park has only one main entrance for vehicles through Hatgal. The other routes include a long-distance bypass through Renchinlumbe and across the mountains, or across the Russian border at Hankh (a border only used normally by Russians and Mongolians since foreigners must enter the country by rail or by air).

2. *Tighten up the roles of National Park Rangers and Strengthen their Commitment.*

A number of times, the gateway to the National Park where fees are collected, has been left unmanned, although there are new barriers that can be raised or lowered to block the road. Cyclists or offroad vehicles are able to drive around - only larger buses might be prevented.

Also, there have also been incidents where Park Rangers have advised upon the locations of campsites, only to find these decisions overturned as land was later found to be part of important winter pasture. This concern might be resolved by introducing stricter accounting practices and identifying potential temporary campsites at the National Park Headquarters, where a set of grid references would be issued. A GPS held by the visiting party would identify when this grid reference had been reached.

3. *The leakage of tourism funds - bypassing the local economy (Figure 8.9).*

Although much of tourism is directed towards tourism camps, little revenue finds its way into the hands of local people.

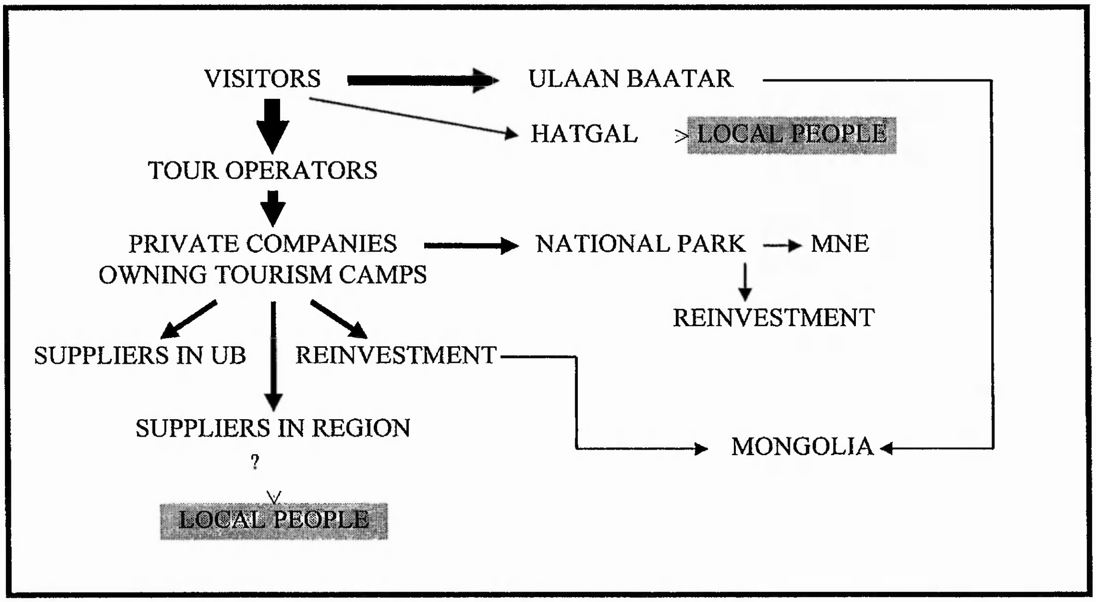


FIGURE 8.9: Income Flow

Local people could supply food and, therefore, increase their stake in the income hierarchy. This could be achieved by firstly, drawing up legislation to ensure that a certain percentage of staff and food has to be bought within Khövsgöl by the tourism companies and, secondly, local people could form small co-operatives, (Figure 8.10) all contributing what excess they could afford and thereby gaining payment from a guaranteed market.

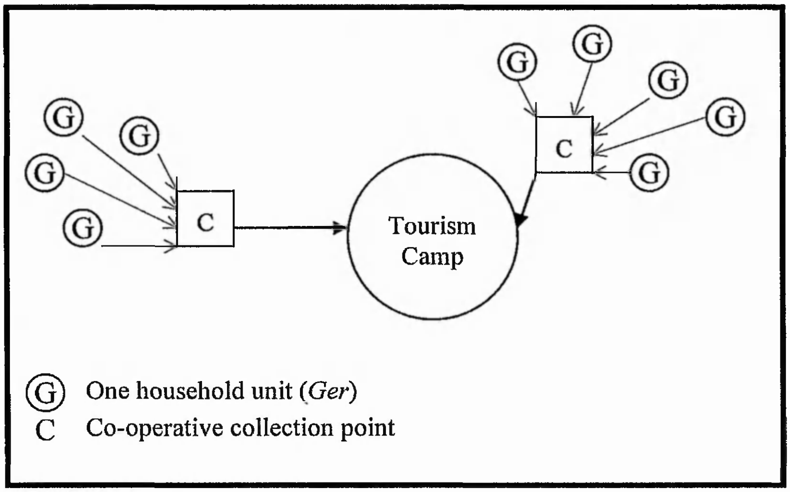


FIGURE 8.10: Co-operatives

Alternatively, local people could increase their stake in the tourism industry by organising their own companies, which provide tourism-related services. In this manner they would take a higher proportion of funds as they would be operating higher up the supply chain. Several local families have capitalised upon the market economy and the opportunities open to them in Hatgal, by targeting individual or independent travellers and offering to hire horses or guide them around the region. The Governor of Hatgal has set up a company (in conjunction with other local investors) and has built a new tourism camp only 1km north of Hatgal.

8.4 Limitations of Study

In the first phase of research, RRA work was limited by conditions and logistics in the field. It is felt that although it would have been possible to visit more families, or record the site (using GPS) of more settlements in the time available, the time in the field was spent in a valuable manner. The logistical set-up of a base-camp curtailed the research from taking place over a large area, and the intentions of Daschiirev, the Director of Khövsgöl National Park, were that the scientific team should concentrate their attention in a smaller area than was originally intended. However, the logistical limitations of reaching local people were balanced by the degree of attention given to other aspects of the National Park, whether it was the Management, personnel, training, local people, social problems or economic situations. This only served to reinforce the integrated nature of tourism management in this region.

Although the GIS is not intended to generate decision-support for management of all conflicts, its implementation into this region will certainly generate more awareness about how decisions take place. The conditions of research in this case pose a unique series of problems for the application of GIS. Firstly, to collect all the data that are required for the database from the area of the National Park is going to take several years. What can be achieved in the available time is a basic structure for the input of data, suitability of the hardware, software and the completion of a feasibility study. This, however, is not seen as a limitation, merely the observation of the beginning of a process that is expected to be dynamic, and to change each year it is in use.

The most important aspects of the research concentrate on how data are to be collected in the most efficient way, liaison with the management and personnel structure already resident, and on how data are to be manipulated within the system, so as to ensure its continued use and success.

8.5: Summary

Firstly, a distinction in the law must be made for 'Protected Areas' which are subject to stricter environmental, social and economic policies. These laws should be determined according to the requirements for the protection of each landscape. In this way, GIS could help to determine appropriate amendments with evidence from the digital database showing how the Park could be better managed with specific legal jurisdiction.

Secondly, the amount of 'investment' that the National Park has in regulating camping sites must be increased. Currently, sites have to be up to acceptable environmental standards (set by the National Park Administration), but are managed by private companies. The National Park Administration works with local people in the provision of *gers* or wooden cabins on particular routes around the lake, each having the necessary cooking and living conditions for overnight stay. In order to use this network, a fee would be paid to the National Park on arrival and some form of 'coupon' given to tourists who can then 'spend' it at locations on their route.

Local people with an interest in tourism, or who wanted to offer support services, can then visit and provide food. A list of possible 'transactions' could be placed in each *ger* with prices, along with an English/Mongolian translation. In this way, local people would be able to supply wood and limited food to tourists; the tourists themselves would be able to have an 'independent' experience that was structured to enable the National Park Administration to monitor movements and gain appropriate fees. More importantly, a level of interaction that was acceptable to both visitors and local people would be established, where guidelines could be drawn up to enable local people to indicate they were 'busy' or that it was the turn of one family rather than another to offer hospitality. In this manner, local people and visitors are able to stage their own interactions without being bordered by regime or National Park regulations.

Much of the administration of this system could be undertaken through the GIS, enabling managers to keep up-to-date information about visitor movements through the Park, including length of stay and monitor attitudes and feelings of local people.

This would be a direct response to queries and questions raised by local people during the 1996 fieldwork about their relationships with visitors. By allowing them to define the nature of their relationship on a day-to-day basis, misunderstandings and a feeling of uninvolvement can be avoided.

Moreover, the National Park and local people would be taking a stake higher up the supply hierarchy and would, thus, be stemming some of the income leakage out of the region. They would also be targeting a different tourist type from those who book the managed visits at private camps. Thus the National Park could exploit and enlarge the independent tourist (Specialist Ecotourist) niche and cater for this market in a constructive way rather than attempting to discourage independent visitors. By increasing surveillance, the 'explorer' types who have little money, can be discouraged at the gates, thus ensuring that Park fees are paid for the benefit of all.

A third recommendation is that the National Park should make available accounting records, showing how income from tourists and funding from the MNE has been used to sustain the Park's activities. A version of this could be produced for visitors and local people in order that it can be seen how money is being spent. This might well raise an agenda of future projects which could use funding and generate interest in enterprise developments by the local community.

Park goals and objectives should be defined in a clear and precise manner. For the purposes of this research, goals have been described as 'Conservation of environment and culture, in a framework of sustainable development'. These terms have been used, after extensive consultation with the National Park authorities, who outlined the types of tourists they wanted and what they saw as the role of the Park.

Once this has been set out, the relevance of proposed objectives can be more easily determined. It is important to see that the objectives of conservation, economic development and the maintenance of the social and cultural landscape are all regarded as important, and that too much emphasis is not placed on one, at the expense of the others. Sustainability depends upon the balance of these objectives. Too high a priority placed upon development will impair the environmental and social landscapes for the future - ensuring only limited development and the loss of important aspects of the region.

Objectives should be perceived in terms of value rather than cost. Value is not necessarily tangible, and must also be seen as value to future generations. Additionally, it can be determined as the cost required to restore a site back to its original state. In some cases this may take many years, or be impossible.

Visitor information should be increased at the Park entrance and within Hatgal. Visitors commented upon the lack of information and interpretation within Khövsgöl and indicated strongly that their experience would have gained quality had some form of guiding structure been available. Information packs should be obtainable from a 'Visitor Centre' which should be the focus of National Park, local people and tourist contacts.

For the GIS (Figure 8.11) within the Park, a standard PC system should be implemented, consisting of a Pentium 133, 32MB, 4GIG PC with 17" monitor.

This will run ARC/View, along with standard office software such as MS Office or Lotus Smartsuite. This also allows the National Park authorities to produce educational and learning information for local people and visitors (Hall *et al.*, 1993). Large distributions of leaflets or maps could be sent to a common printer used by all the National Parks and the MNE. This would keep prices low and ensure that all output can be produced from standard media and to an acceptable standard.

A UPS (Uninterruptible Power Supply) would prevent shutdown of the machine due to irregular power service, and would permit emergency saving of data and correct machine shutdown (preventing file corruption). Possible data transfer could take place via modem, otherwise storage on an appropriate medium (disk, CD or Zip drive) would allow data to be exchanged by hand, utilising the many people who travel from Ulaanbaatar to Khövsgöl (or *vice versa*) each week.

Within Ulaanbaatar, existing computer architecture includes a PC system consisting of a number of stand-alone machines running Windows and office software (belonging to the MNE) and a Sunsparc 20 (running Solaris UNIX), belonging to the United Nations Biodiversity Project. This is connected to a number of PC terminals, a plotter and a digitising tablet. Running Arc/Info, this could provide a processing centre for data from all the Protected Areas, enabling generalised maps and other literature to be produced. An updated database can be sent out to Khövsgöl periodically, enabling local managers to identify changes quickly and take the appropriate steps to rectify them.

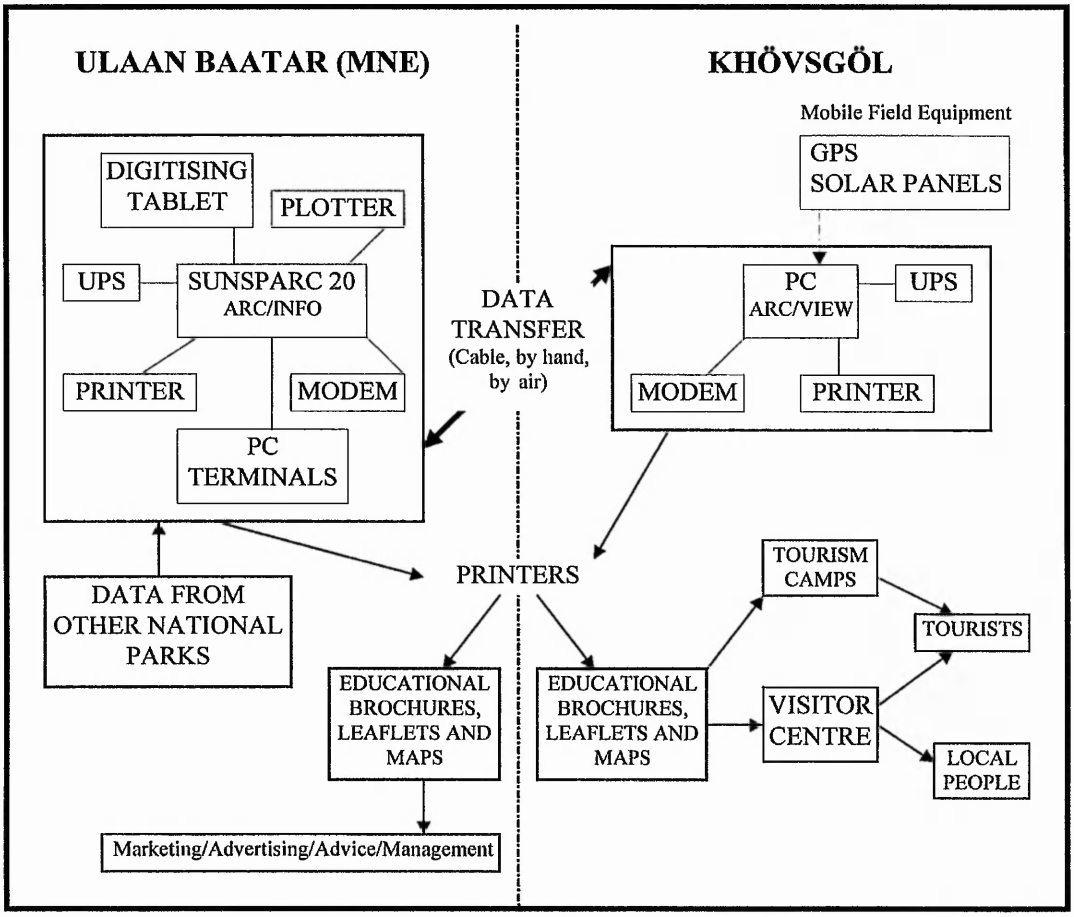


FIGURE 8.11: Computer Hardware Links between Khövsgöl and MNE

Table 8.4 outlines the data required for a GIS and its source from this research, or the National Park authorities.

Type	*Sources*
Environmental	
Base Maps	*Russian 1:100,000 digitised map*
Climate	*Khövsgöl Atlas*
Digital Elevation Model	*Construct from digitised basemap or Atlas*
Geology	*Khövsgöl atlas, Geological Institute*
Landuse	*National Park (tourism), Community Survey 1996 (pasture)*
Location of campsites	*National Park needs to GPS*
National Park Boundary	*Figure 1.11*
Position of Trails and attribute data about usage	*National Park needs to GPS*
Potential Animal Distribution (by animal)	*Discovery Expeditions research. 1995 & 1996*
Satellite Data	*Baker (1995)*
Type and availability of fuel resources	*Satellite Imagery / Atlas / Rangers*
Vegetation classified according to susceptibility to each proposed tourism activity	*Integration of tourism, environmental and cultural data within a GIS*
Water Resources (Lakes, Rivers and Tributaries)	*Basemap*
Cultural & Community	
Baseline record of cultural practices	*Community Survey 1996*
Dependence upon NP resources	*Community Survey 1996*
Extent of education available	*Sum Governors*
Extent of semi-nomadic movements	*Community Survey 1996*
Farming practices and patterns	*Community Survey 1996*
Location of settlements	*GPS 1996*
Numbers and location of people	*GPS/Community Survey 1996/Sum Governors*
Numbers of children	*Community Survey 1996/Sum Governors*
Numbers of livestock	*Community Survey 1996/Tax records*
Occupation	*Community Survey 1996/Sum Governors*
Perceptions of the environment	*Community Survey 1996*
Perceptions of the National Park	*Community Survey 1996*
Perceptions of tourism	*Community Survey 1996*
Position of resources (e.g. NP HQ)	*GPS*
Production of handicrafts	*Community Survey 1996*
Religion	*Community Survey 1996*
Structure of the community	*Community Survey 1996/Sum Governors*
Types of settlement	*Community Survey 1996*
Tourism	
Activities participated in and where	*GPS/National Park/Tourist Questionnaire*
Amount of money spent in the region	*Tourist Companies/National Park (taxes)*
Availability of food and resources required per tourist	*Tourist Companies*
Average length of time stayed	*Tourist Companies*
Numbers of tourists in the region	*Tourist Companies*
Potential tourist bed space in the region	*Tourist Companies/National Park*
Status and capacity of litter disposal and sewage facilities	*National Park*

TABLE 8.4: Data Requirements

There must be recognition that 'all ecotourism is not the same' and that all tourists who are visiting the region are not the same in terms of their backgrounds and motivations. Thus, management needs to identify these different types and construct a planning strategy around them (Section 8.2.6). This recognition should also be extended to view ecotourism as much in terms of the services and management of a site (supply) as the tourists themselves (demand).

Finally, the hierarchical communications network which exists in each organisation should be devolved to allow contacts to be made. Figure 8.12 illustrates the vertical nature of communications between workers in two companies. Communication from a staff member in one company has to traverse seven steps (bold lines) before it reaches the staff member from the other company. To make appointments or new contacts means that staff rely upon the seniority of their manager in the company to push the networking through. Staff members, project leaders or managers could easily make new contacts themselves (dashed lines), without having to direct this networking through the directors of the companies.

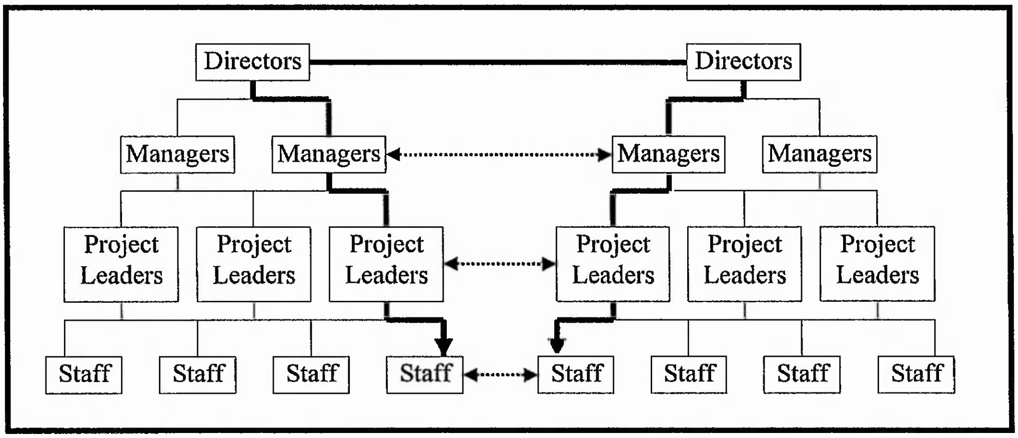


FIGURE 8.12: Communications Hierarchy

This is time consuming and inefficient. To improve quality management, 'horizontal' lines of communication should be established. These can be managed by the implementation of a document tracking system and by outlining proper procedures. If periodic briefings are conducted, then managers will always be aware of project progress.

8.6: Further Research

A number of issues that demand further research have been raised by this discussion. It would be very useful to identify whether tourism is affecting the locations of local people - would some families move closer to tourists in order to undertake seasonal work and if this were true, how would this affect the quality of grazing and pastures for their livestock? Additionally, if these changes took place it is likely that there would be some form of change in dispute resolution since there would be more competition for grazing resources.

Another factor is the complex issue of rights and whether people who seasonally migrate outside the Park have the same rights as those who remain within them throughout the year. Would there be a difference of rights to pasture or benefits from tourism developments, between those in the Park only during summer and those within the boundaries only in winter?

In terms of technology, a very useful project would be to produce a costing for the location and construction of a direct data communications link from Hatgal to

Ulaanbaatar. Depending upon the scope of investment, this could also offer more reliable communications for local people and tourists when data are not being transferred. It would additionally serve as an emergency communications network and would, therefore, be of benefit in terms of the general medical assistance to the region.

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APPENDICES

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[A] Community Survey 1996

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Community Survey 1996

[To be applied by the researcher with the aid of an interpreter]

Notes

- To be applied to each family.
- Head of each family should be identified as a means of identification, but questions may be applied to the family unit, to gauge the overall feelings of each family.
- Family name and position re. the GPS should be obtained, and a reference number coded at the top of each answer sheet. Taking the form of dd/mm/A...
- Use the paper copy map to discuss and identify spatial data, then input into the Kalidor with other attribute data.

Lindsay Fielding 1996

Herding Practices

1. *Where is the water source that you rely on? Mark on the map.*
   Lake ☐ Tributary ☐ Other ☐

2. *and by what means do you move during the year? Please mark on the map:*

	- *spring*	*summer*	*autumn*	*winter*
Dates				
How Far				

Method of Transport ☐

3. *If you move different animals to different places, please describe this below*

☐

4. *Are there any places where you would prefer not to herd or don't want to go?*
Yes:- ☐ *No* ☐

Where and why?

☐

5. *Do you make any payment for use of land?*
Yes:- ☐ *No* ☐ *How much?* ☐

To whom do you pay it?

☐

6. *Are there any tasks to do in your household which cannot be done because there is not enough labour? What are these tasks?*
Herding ☐ Cooking ☐ Other ☐

7. *Do you ever cut grasses? When, Where? (Mark on map)*
spring ☐ *summer* ☐ *autumn* ☐ *winter* ☐

why? ☐

8. *What resources does your household use? (pinpoint on map)*

	good pasture	*average pasture*	*poor pasture*
AMOUNT			
TIME			

9. Do you think your pasture is enough for your livestock? If so, why? If not, why not?

Yes:- ☐ *No* ☐

Why ☐

10. How do you protect your animals?

Family? ☐ Guns ☐ Other ☐

11. Do you have a problem with wild animals?

Yes:- ☐ *No* ☐

How? ☐

12. Do the National Park Rangers help you? How?

Yes:- ☐ *No* ☐

How? ☐

13. This herder is:

- rich ☐ *middle* ☐ *poor* ☐

14. How many animals do you herd?

private ☐ *state* ☐ *kin's animals* ☐ *friends animals* ☐ *other institutions* ☐

sheep ☐ *goats* ☐ *cattle* ☐ *horses* ☐ *camels* ☐

15. Any other comments?

☐

Labour, Jobs and the Economy

16. Breakdown of labour by major tasks and month by all adult men and women in household

Month	Women's tasks	Men's tasks
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

17. Would you like to start a small business (for example sewing, restaurant, roadside-selling)? what sort of business?

Yes ☐ No ☐

18. [ask women] Do you have your own funds which you can use as you wish?

Yes ☐ No ☐

19. Has anyone in your household moved to a different area? Where and Why?

Where

Why

20. Is there a problem of unemployment in your area? If so, please describe it.

21. Do you have a national healthcare service?

Yes ☐ No ☐

Traditional or contemporary?

22. Is it hard for you to see a doctor?

Yes ☐ No ☐

23. Can you get the medicine you need?

Yes ☐ No ☐

24. Do you need to pay medical fees?

Yes ☐ No ☐

25. Are there any products of your household economy which you produce only in order to sell them?

26. How often do you get to Hatgal and what goods do you buy?

Times per month ☐

Salt ☐ Staple Food ☐ Clothing ☐ Luxury food ☐

27. What would you like to buy?

28. Do you supply food or other goods to tourists?

Yes ☐ No ☐

How and what?

29. Do your children want to work in Hatgal or work in the ger?

Hatgal ☐ *Ger* ☐

Why?

30. Any other comments?

Hunting

31. What role does gathering play in your consumption? What foods and where? (put on map) What are the effects on the environment?

32. When do you hunt different types of animals? In which season? Where (indicate on map)

Season	*Animals*
Spring	
Summer	
Autumn	
Winter	

33. Do you think the number of wolves is increasing?

Yes ☐ No ☐

34. What has happened to cause this?

35. Any other comments?

Tourism

36. Do you feel visitors respect your customs?

Yes ☐ No ☐

37. Does it matter if visitors do not understand how to act?

Yes ☐ No ☐

Why?

38. Are Tourist camps good or bad

Yes ☐ No ☐

Why

39. Are you happy to meet tourists?

Yes ☐ No ☐

Why?

40. Which places do you consider to be beautiful and why?

41. Would you want your children to be involved in the tourism industry?

Yes ☐ No ☐

why?

42. Are there any Protected Areas or regions where visitors shouldn't go? (mark on the map)

Yes ☐ No ☐

Why?

43. Any other comments?

Miscellaneous

44. *What do you do in times of natural disaster?*

45. *Do tourists and visitors affect your responses to these disasters?*

46. *Who decides who uses the region's resources?*

47. *Are there disputes over the use of such resources, when do they tend to occur and how are they resolved?*

48. *If a spring, river or lake is polluted, what would you do about it?*

49. *How do you usually deposit your garbage?*

bury it ☐ *burn it* ☐ *take it to a garbage point* ☐

other

50. *What do you do with your animal dung?*

leave it ☐ *burn it* ☐

other

51. *From what source(s) do you obtain your fuel? Enter the cost in local currency*

Hatgal ☐ *friend* ☐ *other* ☐
Cost ☐ ☐ ☐

52. *Are you happy with your dwelling?*

Yes ☐ No ☐

type

53. *Would you prefer some other kind of dwelling?*

Yes ☐ No ☐

Please explain.

54. *Has the National Park led to any changes in your lifestyle?*

Yes ☐ No ☐

what?

55. *How can the National Park help you?*

56. *If you had a problem with something to do with the National Park, where would you go?*

hatgal Park administration ☐ *governor* ☐ *UB administration* ☐

other

57. *How much tax/permit fee do you pay to the National Park?*

58. *Are there any special circumstances surrounding this?*

59. *Any other comments?*

[B] Response Sheets

RESPONSE SHEETS

Ref:- / /

Name:

Herding Practices

1. Lake ☐ Tributary ☐ Other ☐

2. Dates - spring ☐ summer ☐ autumn ☐ winter ☐
How Far ☐ ☐ ☐ ☐

Method of Transport ☐

3 ☐

4. Yes:- ☐ No ☐

5. Yes:- ☐ *No* ☐ *How much?* ☐

6. Herding ☐ Cooking ☐ Other ☐

7. spring ☐ summer ☐ autumn ☐ winter ☐

8. AMOUNT ☐ ☐ ☐
good pasture *average pasture* *poor pasture*
TIME ☐ ☐ ☐

9. Yes:- ☐ No ☐

10. Family? ☐ Guns ☐ Other ☐

11. Yes:- ☐ No ☐

12. Yes:- ☐ No ☐

13. rich ☐ middle ☐ poor ☐

14. private state kin's animals friends animals other institutions

sheep goats cattle horses camels

15.

Labour, Jobs and the Economy

16.

Month	Women's tasks	Men's tasks
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

17. Yes No

18. Yes No

19. Where

Why

20.

21. Yes No

22. Yes No

23. Yes No

24. Yes No

25.

26. Times per month

Salt Staple Food Clothing Luxury food

27.

28. Yes No

29. Hatgal *Ger*

30.

Hunting

31.

32.

Season	*Animals*
Spring	
Summer	
Autumn	
Winter	

33. Yes No

34.

35.

Tourism

36. Yes ☐ No ☐

37. Yes ☐ No ☐

38. Yes ☐ No ☐

39. Yes ☐ No ☐

40.

41. Yes ☐ No ☐

42. Yes ☐ No ☐

43.

Miscellaneous

44.

45.

46.

47.

48.

49. bury it ☐ burn it ☐ take it to a garbage point ☐

other

50. leave it ☐ burn it ☐

other

51. Hatgal *friend* *other*

Cost

52. Yes ☐ No ☐

type

53. Yes ☐ No ☐

54. Yes ☐ No ☐

55.

56. hatgal Park administration ☐ governor ☐ UB administration ☐

other

57.

58.

59.

[C] Visitor Questionnaire 1996

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Visitor Questionnaire 1996

Dear Visitor,
I am currently researching tourism in this region for my PhD, and would be very grateful for your comments and input. The data will be used in constructing a database for the region, allowing planners to manage the Khövsgöl National Park in the interests of tourists, the environment and local people. Any data that you supply will remain confidential, please feel free to disregard any questions that you do not feel comfortable with. I would be grateful if you could return this questionnaire to your tour operator, or forward it to me at the above address.

Lindsay Fielding, BSc.

Section 1: Your travel arrangements

[01] Which tour operator handled your travel arrangements?

(01) Pferd & Reiter ☐
(02) Lernidee Reisen ☐
(03) One World ☐
(04) INGOL ☐
(05) Vermillion ☐
(06) Tiger Mountain ☐
(07) Juulchin ☐
(08) Shuzen ☐
(09) Beluga tours ☐
(10) Explore ☐
Other *(please specify)* ____________

[02] What are your motivations for coming to Khövsgöl? (Please tick all that apply)

	Strong	Moderate	Weak
Nature	(a) ☐	(b) ☐	(c) ☐
Activities	(a) ☐	(b) ☐	(c) ☐
Culture	(a) ☐	(b) ☐	(c) ☐
History	(a) ☐	(b) ☐	(c) ☐
Wilderness/Remote	(a) ☐	(b) ☐	(c) ☐
Mountains	(a) ☐	(b) ☐	(c) ☐
Lake	(a) ☐	(b) ☐	(c) ☐
People	(a) ☐	(b) ☐	(c) ☐
Inaccessibility	(a) ☐	(b) ☐	(c) ☐
Other	____________		

[03] Would you return to Khövsgöl?

(01) Yes ☐ (02) No ☐

If yes, why? ☐

[04] What other regions of the world are you interested in?

☐

[05] Are there any regions of Khövsgöl that you didn't visit, but that you would have wanted to?

(01) Renchinlumbe ☐
(02) Mountains ☐
(03) East side of Lake ☐
(04) West side of Lake ☐
(05) Hankh ☐
(06) Hatgal ☐
Other *(please specify)* ☐

[06] Why were you not able to visit them?

(01) Not enough time ☐
(02) Unsure how to get there ☐
(03) Not included in cost of trip ☐
Other *(please specify)* ☐

[07] What activities:

	did you take part in?		would you have liked to have taken part in?	
Horseriding	(01)	☐	(10)	☐
Photography	(02)	☐	(11)	☐
Fishing	(03)	☐	(12)	☐
Hunting	(04)	☐	(13)	☐
Botany	(05)	☐	(14)	☐
Walking	(06)	☐	(15)	☐
Climbing	(07)	☐	(16)	☐
Local people/Culture	(08)	☐	(17)	☐
Other *(Please specify)*	(09)	☐	(18)	☐

[08] Do you feel the cost of your holiday represented value for money?

(01) Yes ☐
How? ☐

(02) No ☐
Why? ☐

[09] Do you have any other comments on the issues in this section?

Section 2: Activities in Khövsgöl

[10] Can you speak Mongolian/did you have access to an interpreter? (Tick as appropriate)

(01) Speak Mongolian ☐
(02) Use of an Interpreter ☐

[11] Were you given environmental guidelines on correct behaviour in the Park?

(01) Yes ☐
Who by?
(11 cont) What were they?

(02) No ☐

[12] Did your group stop at the ranger station on the Park border to pay fees?

(01) Yes ☐ (02) No ☐ (03) Don't Know ☐

[13] Do you know how much the Park fees are per night?

(01) Yes ☐ (02) No ☐

[14] Do you consider the fees to be too high/about right/not enough?

(01) Too high ☐ (02) About right ☐ (03) Not enough ☐

[15] Did you interact with local people?

(01) Yes ☐
In what ways ?
(01) Visited a *ger* - Organised trip ☐
(02) Visited a *ger* - Own initiative ☐
(03) Entered a *ger* ☐
(04) Spoke to local people outside the tourist camp ☐
Other contact *(Please specify)*

(09) No ☐ Why?

[16] Did you eat 'traditional' Mongolian food?

(01) Yes ☐ (02) No ☐ (03) Don't Know ☐

[17] Did you expect to visit more local people?

(01) Yes ☐
(02) No ☐

Why did you not visit more local people? ____________

[18] Did you stay overnight in Hatgal

(01) Yes ☐ (02) No ☐
If yes - where? ____________

[19] What did you buy locally?

(01) Local handicrafts ☐
(02) Staple Food *(bread/flour/rice etc.)* ☐
(03) Food *(chocolate/sweets)* ☐
(04) Clothing ☐
Other *(Please specify)* ____________

[20] What would you have liked to have bought locally?

____

[21] Were you briefed about wildlife?

(01) Yes ☐ (02)No ☐

[22] Did you see any wildlife?

(01) Yes ☐ (02) No ☐ (03) Don't Know ☐
Which species? ____________

[23] Did you expect to see more ?

(01)Yes ☐ (02) No ☐ (03) Don't Know ☐

[24] Did you meet any Park rangers/officials?

(01) Yes ☐ (02) No ☐ (03) Don't Know ☐

In what context ? ____________

[25] Would local interpretation by a guide have added to your experiences?

(01) Yes ☐ (02) No ☐ (03) Don't Know ☐

[26] Do you have any other comments?

Section 3: About you

[27] Which country do you live in ?

[28] What is your occupation?

[29] Please indicate your age by ticking the appropriate box

(01) Under 20
(02) 21-30
(03) 31-40
(04) 41-50
(05) 51-60
(06) 60+

[30] Which group best describes your annual household income?

(01) Up to £4,999
(02) £5,000 - £9,999
(03) £10,000 - £14,999
(04) £15,000 - £19,999
(05) £20,000 - £24,999
(06) £25,000 - £29,999
(07) £30,000 - £34,999
(08) £35,000+

[D] Khövsgöl Questionnaire 1995

Khövsgöl Questionnaire 1995

(1) Please tell us a little about the availability of water for your livestock during the year

(2) How do you think the changes in the structure and dimensions of agriculture since 1950 and 1970 have influenced the life of the people?

(3) Economy:- +ve/-ve
ecology +ve/-ve

Which role does gathering play in your consumption? What are the effects on the environment?

quantify this to berries, mushrooms, nuts, onions etc.
find out what is baseline gathering as percentage in whole diet

(4) Is there any illegal hunting round here :- please describe

(5) What resources are most useful in counteracting the following disasters? What do you do in times of natural disaster?
drought animal epidemic
heavy snowfall late frost
what impact do tourism and visitors have etc. on the character of these disasters?
(5a) Who is best placed to obtain these resources and who decides who uses these resources
(5b) Are there disputes over the use of such resources, when do they tend to occur and how are they resolved?

(6) If you have new energy sources, do you like them? If not or if so, tell us the reasons.
where get - from visitors? describe equipment/method used
(6a) How do you usually deposit your garbage?
collected, burning, scattering, burying, making manure, other
(6b) What do you do with your animal dung?
sheep&goats, cattle, horses, camels, other

(7) Breakdown of labour by major tasks and month by all adult men and women in household
area with no tourism impact/area with tourism impact

(8) Have you heard any stories about ALMAS or ALMASTI? Please note - find where originated.

(9) Questions about level of visitor knowledge concerning behaviour in *ger*.

(10) Tourism employment - contrast with men's work and women's work without...

(11) Would you want your children to be involved in the tourism industry?

(12) Are there any places where you would prefer not to herd or don't want to go?
(12a) Are there any places visitors shouldn't go?

(13) What are the causes of drought and desertification?

(14) If a spring, river or lake is polluted, what would you do about it? Why?
(14a) Are there any animal species which should not be killed? Why?
(14b) If the animals often get diseases, what do you do? Why?
potential resources as tourists/vets?

(15) Are there any herding tasks to do in your household which cannot be done because there is not enough labour? What are these tasks?

(16) Have the recent economic changes had any effect on women's tasks [eg. making things at home which they used to buy in shops a few years ago]

(17) Do you buy any goods from town which were made at home by women 10 years ago? What are they?

(18) Do you prefer the home-made goods or the bought goods? Why?

(19) [ask women] Would you like to start a small business (for example sewing, restaurant, roadside-selling)? what sort of business? Why - yes (or why -no)

(20) [ask women] Do you have your own funds which you can use how you like?

(21) Do you ever cut grasses? How? Why?

(22) Has anyone in your household moved to a different area?

(23) Is there any problem of unemployment in your area? If so, please describe it.

(24) Do you think the policies of your government represent the interests of the people?

(25) Do you have a national healthcare service? Is it hard for you to see a doctor? Can you get the medicine you need? Do you need to pay medical fees?

(26) What do you think the results of privatisation will be in the future.

(27) From what source (s) do you obtain your fuel? Enter the cost in local currency
effect of incoming

(28) What resources does your household use?
good pasture, average pasture, poor pasture, good farmland, average farmland, poor farmland, vegetable plot, machinery (specify) wells, other (specify)

and link to amount, owner, money value, amount of time used per year, length of time of use rights.

(29) Which kinds of animals are hunted most and what are the reasons for this?
Increase in own consumption/sale in exchange/animals/reasons

(29a) How have these processes influenced the number of animals?

(30) When do you hunt different types of animals? In which season? How? Why? How many animals do you try to kill?

(31) Do you like washing in springs, rivers and lakes? What do you wash (yourself, clothing? why?)

(32) Are you happy with your dwelling? Would you prefer some other kind of dwelling? Please explain.

(33) This herder is:
rich/middle/poor

(34) How many animals do you herd?
collective/private/state/kin's animals/friends animals/other institutions
sheep/goats/cattle/horses/camels

(35) Please tell us about your use of pasture, fodder and concentrates for your livestock. Map *sum* and show pastures used by each herder
quality of pasture [good/medium/poor]
pasture used [land size/spring/summer/autumn/winter]
hay [quantity], fodder, concentrates.

(36) Please tell us where you get your hay, fodder and concentrates from for your livestock?
(36a) Do you think your pasture is enough for your livestock? If so, why? If not, why not?

(37) How often , how far and by what means do you move during the year? Please mark on the map
pasture/days moving/distance/how/staying period/notes/local names
spring/summer/autumn/winter
(37a) If you move different animals to different places, please describe this below

(38) Do you make any payment for use of land? How much? To whom do you pay it?

(39) Are there any products of your household economy which you produce only in order to sell them?

[E] Data Capture Form 1995

Data Capture Form: MCE Mongolia '95

Data Type/Description: ______________________________

____

GPS Location ______________
Waypoint Code ______________
Date ______________
Time ______________

Description of Location: ______________________________

____

____

____

____

Photograph Number/s: ______________________________
Film Number: ______________________________

Comments: ______________________________

____

____

____

Data Capture Form: MCE Mongolia '95

Data Type/Description: ______________________________

____

GPS Location ______________
Waypoint Code ______________
Date ______________
Time ______________

Description of Location: ______________________________

____

____

____

____

Photograph Number/s: ______________________________
Film Number: ______________________________

Comments: ______________________________

____

____

____

[F] 1996 Households Surveyed

1	NOROVSUREN
2	MOROKH
3	DAVAA
4	HULGANAA
5	NYAMDALAGI
6	TERBISH
7	BATDELGER
8	BATBAYAR
9	BARIADTS
10	AIOUSH
11	OTGOO
12	GANSUKH
13	MARMAA
14	CHULUNBATT
15	JARGAL
16	LOGDMAA
17	DOLGVASUMBEREL
18	MANDAKH
19	HURLCHOLONG
20	NAMDAK
21	BAGAA
22	OTGONBYER
23	PUREVSUREN
24	LRHAGVASUREN
25	BATSINGEL
26	OTGONNYAM
27	OYUN
28	BATAAR
29	NYAMOCHIR
30	GAMBATAAR
31	HURTHLER
32	NARAM
33	PUREVJOV
34	BATJARGAL
35	DASHDORCH
36	04/07/C BATAAR
37	ICHINCRORLOO
38	MYGMAR
39	DAWA
40	BURUNTOGTOKH
41	NURDOV
42	RENCHINDORJI
43	CHIMDORJ
44	BATBILIG
45	DAVASDORJ
46	BATZAR
47	BUTKHOR
48	ORDUCH

49	BASSENTSEREN
50	NYAMDA
51	BATSUKH
52	DAMDINJOL
53	BATJOLONG
54	MUNSURJIG
55	TSEVEGDORJ
56	NYAMAR
57	HULTHLER
58	BOWORDORJ
59	TOKHTOKH
60	SANJDA
61	JORHOI
62	HISHUBOYEN
63	BATMUNKH
64	NYAMDALA
65	MYGMAR
66	JANGHOUR
67	BATMUNKH
68	PUREVJOV
69	KHUUGIT
70	OCHIR
71	BATBUYER
72	BERINCHIN
73	NOROSAMBO
74	BYANSUKHD
75	VANDENSINGH
76	DANDER
77	DOLON
78	OIUNTSEREN
79	JIGJIDSUREN
80	MARMA
81	BATSINGEL
82	DAWA
83	ULTSIOKHOTOKH
84	BATSUR
85	YAMBA
86	NYAMAR
87	GANJORL
88	BOWORDORJ
89	ARKJAR
90	BALDORJ
91	BALDAN
92	AMARSANA
93	NAMJEL
94	BATJOLON
95	BATDELGER
96	BATHOYIG

97	TSERENHUNDT
98	OYUNGER
99	INKHTUSHEN
100	BASSENTSEREN
101	PUREV
102	NAMDAK
103	CHOLOMBAT
104	NYAMSUREN
105	19/07/C TAKUMJOW
106	HISHKER
107	COLYA
108	TSEGMIT
109	MYAGMAR
110	MINDBYAR
111	HUJI
112	JAMB
113	BATBATAAR
114	BATAAR
115	IRINCHIN
116	BASSENGER
117	DOLMAA
118	BATAAR
119	BAYANJARGAL
120	BATAAR
121	TSERENDORJ
122	JIGJIGSUREN
123	GANTSETSEG
124	TSOGBADRACH
125	DALAKHJAV
126	DOLJIN
127	AMARRJARGAL
128	CHULUUNBAT
129	BYRA
130	BAASANJAV
131	NYAMJAV
132	TOMENAIUSH
133	TENTSUREN
134	DARSUREN

[G] 1996 Coded Households Surveyed with GPS Points

1	23/06/A	50 24 226 N	100 19 246 E
2	24/06/A		
3	24/06/B	50 24 942 N	100 20 463 E
4	24/06/C	50 24 226 N	100 19 246 E
5	24/06/D	50 25 226 N	100 23 119 E
6	24/06/E	50 25 226 N	100 23 119 E
7	24/06/F	50 28 628 N	100 24 485 E
8	25/06/A	50 28 857 N	100 23 740 E
9	25/06/B	50 28 137 N	100 27 183 E
10	25/06/C	50 29 913 N	100 23 668 E
11	25/06/D	50 31 417 N	100 24 335 E
12	25/06/E	50 31 744 N	100 23 990 E
13	25/06/F	50 31 405 N	100 26 418 E
14	25/06/G	50 30 169 N	100 26 700 E
15	26/06/A	50 35 171 N	100 31 381 E
16	26/06/B	50 38 631 N	100 31 051 E
17	26/06/C	50 38 189 N	100 29 847 E
18	28/06/A	50 59 388 N	100 43 194 E
19	30/06/A	51 03 415 N	100 95 753 E
20	01/07/A	51 15 557 N	100 48 601 E
21	01/07/B	51 15 690 N	100 52 188 E
22	01/07/C	51 14 184 N	100 53 210 E
23	02/07/A	51 19 403 N	100 53 747 E
24	02/07/B	51 19 403 N	100 53 747 E
25	02/07/C	51 19 403 N	100 53 747 E
26	02/07/D	51 19 879 N	100 54 401 E
27	02/07/E	51 18 144 N	100 54 983 E
28	02/07/F	51 19 864 N	100 54 682 E
29	02/07/G	51 19 800 N	100 54 464 E
30	03/07/A	51 19 487 N	100 48 864 E
31	03/07/B	51 16 470 N	100 46 585 E
32	03/07/C	51 16 470 N	100 46 585 E
33	03/07/D	51 16 470 N	100 46 585 E
34	04/07/A	51 22 157 N	100 49 449 E
35	04/07/B	51 22 157 N	100 49 449 E
36	04/07/C	51 22 157 N	100 49 449 E
37	04/07/D	51 24 104 N	100 48 044 E
38	04/07/E	51 27 154 N	100 45 282 E
39	04/07/F	51 24 861 N	100 48 083 E
40	04/07/G	51 24 861 N	100 48 083 E
41	05/07/A	51 26 626 N	100 49 009 E
42	05/07/B	51 26 626 N	100 49 009 E
43	05/07/C	51 26 600 N	100 48 781 E
44	05/07/D	51 26 600 N	100 48 781 E
45	05/07/E	51 26 600 N	100 48 781 E
46	05/07/F	51 26 726 N	100 48 385 E
47	05/07/G	51 26 726 N	100 48 385 E
48	05/07/H	51 26 566 N	100 48 112 E

49	05/07/I	51 26 566 N	100 48 112 E
50	06/07/A	51 26 305 N	100 47 385 E
51	06/07/B	51 26 305 N	100 47 385 E
52	06/07/C	51 26 305 N	100 47 385 E
53	06/07/D	51 26 603 N	100 46 531 E
54	06/07/E	51 29 479 N	100 45 234 E
55	06/07/F	51 29 479 N	100 45 234 E
56	06/07/G	51 27 387 N	100 44 287 E
57	06/07/H	51 26 566 N	100 48 112 E
58	08/07/A	51 29 367 N	100 46 285 E
59	08/07/B	51 30 632 N	100 45 542 E
60	08/07/C	51 29 933 N	100 43 948 E
61	08/07/D	51 37 490 N	100 34 139 E
62	08/07/E	51 29 933 N	100 43 948 E
63	08/07/F	51 29 737 N	100 43 570 E
64	08/07/G	51 29 737 N	100 43 570 E
65	08/07/H	51 28 830 N	100 42 640 E
66	10/07/A	51 28 830 N	100 42 640 E
67	10/07/B	51 28 830 N	100 42 640 E
68	14/07/A	51 37 490 N	100 34 139 E
69	15/07/A	51 37 895 N	100 33 947 E
70	15/07/B	51 37 236 N	100 31 879 E
71	15/07/C	51 37 236 N	100 31 879 E
72	15/07/D	51 35 908 N	100 31 109 E
73	15/07/E	51 35 908 N	100 31 109 E
74	15/07/F	51 34 057 N	100 30 495 E
75	15/07/G		
76	15/07/H	51 35 488 N	100 30 486 E
77	15/07/I	51 35 381 N	100 29 997 E
78	15/07/J	51 35 321 N	100 29 759 E
79	16/07/A	51 34 904 N	100 30 056 E
80	16/07/B	51 34 904 N	100 30 056 E
81	16/07/C	51 34 904 N	100 30 056 E
82	16/07/D	51 34 508 N	100 30 295 E
83	16/07/E	51 34 560 N	100 29 926 E
84	16/07/F	81 34 496 N	100 29 759 E
85	16/07/G	51 34 496 N	100 29 759 E
86	16/07/H	51 34 175 N	100 29 504 E
87	16/07/I	51 33 694 N	100 29 865 E
88	16/07/J	51 33 664 N	100 29 637 E
89	16/07/K	51 33 773 N	100 29 357 E
90	16/07/L	51 34 365 N	100 30 054 E
91	16/07/M	51 34 365 N	100 30 054 E
92	17/07/A	51 34 255 N	100 28 799 E
93	17/07/B	51 34 124 N	100 28 533 E
94	17/07/C	51 35 305 N	100 27 896 E
95	17/07/D	51 35 540 N	100 27 531 E
96	17/07/E	51 35 233 N	100 27 309 E

97	17/07/F	51 35 233 N	100 27 309 E
98	17/07/G	51 35 404 N	100 27 182 E
99	17/07/H	51 34 933 N	100 27 541 E
100	17/07/I	51 44 732 N	100 27 532 E
101	17/07/J	51 44 732 N	100 27 532 E
102	18/07/A	51 27 666 N	100 20 644 E
103	19/07/A	51 22 898 N	100 18 515 E
104	19/07/B	51 22 626 N	100 18 982 E
105	19/07/C	51 22 416 N	100 19 503 E
106	19/07/D	51 22 693 N	100 19 949 E
107	19/07/E	51 23 883 N	100 17 544 E
108	19/07/F	51 23 883 N	100 17 544 E
109	19/07/G	51 23 881 N	100 18 606 E
110	19/07/H	51 22 396 N	100 18 098 E
111	19/07/I	51 22 396 N	100 18 098 E
112	04/08/A	50 38 002 N	100 13 556 E
113	04/08/B	50 38 422 N	100 13 329 E
114	04/08/C	50 38 946 N	100 12 445 E
115	04/08/D	50 38 946 N	100 12 445 E
116	05/08/A	50 37 628 N	100 12 086 E
117	05/08/B	50 37 628 N	100 12 086 E
118	05/08/C	50 37 029 N	100 12 976 E
119	05/08/D	50 36 065 N	100 11 872 E
120	05/08/E	50 34 443 N	100 09 988 E
121	06/08/A	50 29 349 N	100 06 445 E
122	06/08/B	50 28 730 N	100 06 684 E
123	06/08/C	50 29 528 N	100 06 677 E
124	06/08/D	50 28 791 N	100 05 912 E
125	06/08/E	50 28 791 N	100 05 912 E
126	06/08/F	50 28 394 N	100 05 018 E
127	08/08/A		
128	08/08/B		
129	08/08/C		
130	08/08/D		
131	08/08/E		
132	08/08/F		
133	08/08/G		
134	08/08/H		

1	23/06/A	NOROVSUREN	50 24 226 N	100 19 246 E
2	24/06/A	MOROKH		
3	24/06/B	DAVAA	50 24 942 N	100 20 463 E
4	24/06/C	HULGANAA	50 24 226 N	100 19 246 E
5	24/06/D	NYAMDALAGI	50 25 226 N	100 23 119 E
6	24/06/E	TERBISH	50 25 226 N	100 23 119 E
7	24/06/F	BATDELGER	50 28 628 N	100 24 485 E
8	25/06/A	BATBAYAR	50 28 857 N	100 23 740 E
9	25/06/B	BARIADTS	50 28 137 N	100 27 183 E
10	25/06/C	AIOUSH	50 29 913 N	100 23 668 E
11	25/06/D	OTGOO	50 31 417 N	100 24 335 E
12	25/06/E	GANSUKH	50 31 744 N	100 23 990 E
13	25/06/F	MARMAA	50 31 405 N	100 26 418 E
14	25/06/G	CHULUNBATT	50 30 169 N	100 26 700 E
15	26/06/A	JARGAL	50 35 171 N	100 31 381 E
16	26/06/B	LOGDMAA	50 38 631 N	100 31 051 E
17	26/06/C	DOLGVASUMBEREL	50 38 189 N	100 29 847 E
18	28/06/A	MANDAKH	50 59 388 N	100 43 194 E
19	30/06/A	HURLCHOLONG	51 03 415 N	100 95 753 E
20	01/07/A	NAMDAK	51 15 557 N	100 48 601 E
21	01/07/B	BAGAA	51 15 690 N	100 52 188 E
22	01/07/C	OTGONBYER	51 14 184 N	100 53 210 E
23	02/07/A	PUREVSUREN	51 19 403 N	100 53 747 E
24	02/07/B	LRHAGVASUREN	51 19 403 N	100 53 747 E
25	02/07/C	BATSINGEL	51 19 403 N	100 53 747 E
26	02/07/D	OTGONNYAM	51 19 879 N	100 54 401 E
27	02/07/E	OYUN	51 18 144 N	100 54 983 E
28	02/07/F	BATAAR	51 19 864 N	100 54 682 E
29	02/07/G	NYAMOCHIR	51 19 800 N	100 54 464 E
30	03/07/A	GAMBATAAR	51 19 487 N	100 48 864 E
31	03/07/B	HURTHLER	51 16 470 N	100 46 585 E
32	03/07/C	NARAM	51 16 470 N	100 46 585 E
33	03/07/D	PUREVJOV	51 16 470 N	100 46 585 E
34	04/07/A	BATJARGAL	51 22 157 N	100 49 449 E
35	04/07/B	DASHDORCH	51 22 157 N	100 49 449 E
36	04/07/C	BATAAR	51 22 157 N	100 49 449 E
37	04/07/D	ICHINCRORLOO	51 24 104 N	100 48 044 E
38	04/07/E	MYGMAR	51 27 154 N	100 45 282 E
39	04/07/F	DAWA	51 24 861 N	100 48 083 E
40	04/07/G	BURUNTOGTOKH	51 24 861 N	100 48 083 E
41	05/07/A	NURDOV	51 26 626 N	100 49 009 E
42	05/07/B	RENCHINDORJI	51 26 626 N	100 49 009 E
43	05/07/C	CHIMDORJ	51 26 600 N	100 48 781 E
44	05/07/D	BATBILIG	51 26 600 N	100 48 781 E
45	05/07/E	DAVASDORJ	51 26 600 N	100 48 781 E
46	05/07/F	BATZAR	51 26 726 N	100 48 385 E
47	05/07/G	BUTKHOR	51 26 726 N	100 48 385 E
48	05/07/H	ORDUCH	51 26 566 N	100 48 112 E

49	05/07/I	BASSENTSEREN	51 26 566 N	100 48 112 E
50	06/07/A	NYAMDA	51 26 305 N	100 47 385 E
51	06/07/B	BATSUKH	51 26 305 N	100 47 385 E
52	06/07/C	DAMDINJOL	51 26 305 N	100 47 385 E
53	06/07/D	BATJOLONG	51 26 603 N	100 46 531 E
54	06/07/E	MUNSURJIG	51 29 479 N	100 45 234 E
55	06/07/F	TSEVEGDORJ	51 29 479 N	100 45 234 E
56	06/07/G	NYAMAR	51 27 387 N	100 44 287 E
57	06/07/H	HULTHLER	51 26 566 N	100 48 112 E
58	08/07/A	BOWORDORJ	51 29 367 N	100 46 285 E
59	08/07/B	TOKHTOKH	51 30 632 N	100 45 542 E
60	08/07/C	SANJDA	51 29 933 N	100 43 948 E
61	08/07/D	JORHOI	51 37 490 N	100 34 139 E
62	08/07/E	HISHUBOYEN	51 29 933 N	100 43 948 E
63	08/07/F	BATMUNKH	51 29 737 N	100 43 570 E
64	08/07/G	NYAMDALA	51 29 737 N	100 43 570 E
65	08/07/H	MYGMAR	51 28 830 N	100 42 640 E
66	10/07/A	JANGHOUR	51 28 830 N	100 42 640 E
67	10/07/B	BATMUNKH	51 28 830 N	100 42 640 E
68	14/07/A	PUREVJOV	51 37 490 N	100 34 139 E
69	15/07/A	KHUUGIT	51 37 895 N	100 33 947 E
70	15/07/B	OCHIR	51 37 236 N	100 31 879 E
71	15/07/C	BATBUYER	51 37 236 N	100 31 879 E
72	15/07/D	BERINCHIN	51 35 908 N	100 31 109 E
73	15/07/E	NOROSAMBO	51 35 908 N	100 31 109 E
74	15/07/F	BYANSUKHD	51 34 057 N	100 30 495 E
75	15/07/G	VANDENSINGH		
76	15/07/H	DANDER	51 35 488 N	100 30 486 E
77	15/07/I	DOLON	51 35 381 N	100 29 997 E
78	15/07/J	OIUNTSEREN	51 35 321 N	100 29 759 E
79	16/07/A	JIGJIDSUREN	51 34 904 N	100 30 056 E
80	16/07/B	MARMA	51 34 904 N	100 30 056 E
81	16/07/C	BATSINGEL	51 34 904 N	100 30 056 E
82	16/07/D	DAWA	51 34 508 N	100 30 295 E
83	16/07/E	ULTSIOKHOTOKH	51 34 560 N	100 29 926 E
84	16/07/F	BATSUR	81 34 496 N	100 29 759 E
85	16/07/G	YAMBA	51 34 496 N	100 29 759 E
86	16/07/H	NYAMAR	51 34 175 N	100 29 504 E
87	16/07/I	GANJORL	51 33 694 N	100 29 865 E
88	16/07/J	BOWORDORJ	51 33 664 N	100 29 637 E
89	16/07/K	ARKJAR	51 33 773 N	100 29 357 E
90	16/07/L	BALDORJ	51 34 365 N	100 30 054 E
91	16/07/M	BALDAN	51 34 365 N	100 30 054 E
92	17/07/A	AMARSANA	51 34 255 N	100 28 799 E
93	17/07/B	NAMJEL	51 34 124 N	100 28 533 E
94	17/07/C	BATJOLON	51 35 305 N	100 27 896 E
95	17/07/D	BATDELGER	51 35 540 N	100 27 531 E
96	17/07/E	BATHOYIG	51 35 233 N	100 27 309 E

97	17/07/F	TSERENHUNDT	51 35 233 N	100 27 309 E
98	17/07/G	OYUNGER	51 35 404 N	100 27 182 E
99	17/07/H	INKHTUSHEN	51 34 933 N	100 27 541 E
100	17/07/I	BASSENTSEREN	51 44 732 N	100 27 532 E
101	17/07/J	PUREV	51 44 732 N	100 27 532 E
102	18/07/A	NAMDAK	51 27 666 N	100 20 644 E
103	19/07/A	CHOLOMBAT	51 22 898 N	100 18 515 E
104	19/07/B	NYAMSUREN	51 22 626 N	100 18 982 E
105	19/07/C	TAKUMJOW	51 22 416 N	100 19 503 E
106	19/07/D	HISHKER	51 22 693 N	100 19 949 E
107	19/07/E	COLYA	51 23 883 N	100 17 544 E
108	19/07/F	TSEGMIT	51 23 883 N	100 17 544 E
109	19/07/G	MYAGMAR	51 23 881 N	100 18 606 E
110	19/07/H	MINDBYAR	51 22 396 N	100 18 098 E
111	19/07/I	HUJI	51 22 396 N	100 18 098 E
112	04/08/A	JAMB	50 38 002 N	100 13 556 E
113	04/08/B	BATBATAAR	50 38 422 N	100 13 329 E
114	04/08/C	BATAAR	50 38 946 N	100 12 445 E
115	04/08/D	IRINCHIN	50 38 946 N	100 12 445 E
116	05/08/A	BASSENGER	50 37 628 N	100 12 086 E
117	05/08/B	DOLMAA	50 37 628 N	100 12 086 E
118	05/08/C	BATAAR	50 37 029 N	100 12 976 E
119	05/08/D	BAYANJARGAL	50 36 065 N	100 11 872 E
120	05/08/E	BATAAR	50 34 443 N	100 09 988 E
121	06/08/A	TSERENDORJ	50 29 349 N	100 06 445 E
122	06/08/B	JIGJIGSUREN	50 28 730 N	100 06 684 E
123	06/08/C	GANTSETSEG	50 29 528 N	100 06 677 E
124	06/08/D	TSOGBADRACH	50 28 791 N	100 05 912 E
125	06/08/E	DALAKHJAV	50 28 791 N	100 05 912 E
126	06/08/F	DOLJIN	50 28 394 N	100 05 018 E
127	08/08/A	AMARRJARGAL		
128	08/08/B	CHULUUNBAT		
129	08/08/C	BYRA		
130	08/08/D	BAASANJAV		
131	08/08/E	NYAMJAV		
132	08/08/F	TOMENAIUSH		
133	08/08/G	TENTSUREN		
134	08/08/H	DARSUREN		

[H] 1995 GPS points taken

Mongolia GPS Points

GPS location: 50°.26.60N
100°.10.41E
date: 26.07.95
time: 2:05pm
description: 2 *gers*. no fence, shelter

GPS location: 50°.26.39N
100°.09.85 E
date: 26.07.95
time: 3:00pm
description: 2 *gers*, very near Hatgal. 1 corral. In process of building wooden structure. 5 children. Grandparents next door. She will work with Tomosukh next year for the National Park. Botanist.

GPS location: 50°.27.07N
100°.13.15E
date: 26.07.95
time: 12:40pm
description: 2 *gers*, one 500 yards away. surrounded by fence up hill looking out over Hatgal. Place where tourists not supposed to go... 2 wooden structures by distant *ger*.

GPS location: 50°.24.90N
100°.14.41E
date: 26.07.95
time: 1:00pm
description: 1 *ger*, 2 wooden houses. All enclosed by fence, on edge of lake. Truck parked outside and small van. series of small enclosures and 1 shelter for animals.

GPS location: 50°.28.51N
100°.11.90E
date: 26.07.95
time: 11:45am
description: 1 *ger* next to wooden house, near holiday camp. Small property, 2 small corrals.

GPS location: 50.28.84N
100.12.52E
date:
time:
description: 2 wooden structures with large surrounding fence. 2 shelters, view Hatgal.

GPS location: 50°.39.01N

100°.13.45E

date:
time:
description: 2 *gers* 1 km south from 95L's. 7-8 people. Some work at 95L's and Janghai. 1-2 horses, goats. 2 women, 25,65. 3 men. 74,50,30. 1 young child. 2nd child about 3. Old man sat with legs crossed.

GPS location: 50°.39.31N
100°.12.87E
date:
time:
description: 1 *ger* 1 log structure. 1.5km south 95L. Sheep and goats.

GPS location: 50°.39.46N
100°.12.70E
date:
time:
description: 4 *gers* within 100m of each other. 1 permanent dwelling. 25 goats, 10 sheep 2 horses visible.

GPS location: 50°.37.89N
100°.11.63E
date:
time:
description: 2 *gers* lots semi-permanent buildings. Wooden & metal sheds. 10-15 buildings. Truck. Going into woodland 2-3 horses. 1,000 animals perhaps. yak, goats, sheep seen est. 20

GPS location: 50°.37.34N
100°.11.84E
date:
time:
description: Janghai tourist camp.

GPS location: 50°.36.30-N
100°.12.03E
date: 10.07.95
time: 11:57am
description: 2 *gers*. lots of tree stumps cut down. Fencing. No animals seen. (Baarter's *ger*?)

GPS location: 50°.35.35N
100°.10.48E
date:
time:
description: 5 *gers* strung out in a row. Some tree cutting. 6 corrals, 1 horse 50 goats. 10 heinik.

GPS location: 50°.34.77N
100°.09.69E
date: 10.07.97
time: 12:10
description: Permanent lodgings. 3 buildings 1 log cattle corral. 15-20 heinik

GPS location: 50°.31.12N
100°.06.98E
date:
time:
description: 3 *gers* Construction wooden settlements. Between Hatgal & Janghai

GPS location: 50°.29.99N
100°.06.22E
date: 10.07.95
time: 12:43pm
description: 1 *ger* 5 permanent structures. 5-6 horses

GPS location: 50°28.96N
100°.06.57E
date:
time:
description: 5 *gers*. 50 yak. 10 people or more

GPS location: 50°.29.04N
100°.06.82E
date: 10.07.95
time: 13:21pm
description: 1 *ger* 1 horse. Rocky pasture

GPS location: 50°.31.41N
100°.23.71E
date: 25.07.95
time: 11.48am
description: Open fields. 4 *gers* E. side of lake. 2 wooden structures. 4 corrals. Summer residence.

GPS location: 50°.27.48N
100°.07.04E
date: 27.07.95
time: 10:24am
description: 3 *gers*. 2 related, one other family. 2 small corrals. 2km N Hatgal.

GPS location: 50°.27.77N
100°.07.41E
date: 27.07.95
time: 10:06am

description: *Ger* north of Hatgal. 2 km North. Open fields. 1 permanent structure. Lots of fencing (wire) 2 corrals. Poor family. 8 children 2 girls naadam age.

GPS location: unable to get location

date: 27.07.95
time: 11:22am
description: 3km North of Hatgal. Valley to west of main wash. 3 permanent houses and 4 corrals fencing pole and wire.

GPS location: 50°.26.607
100°.09.551 (trimble)
date: 21.06.95
time:
description: National Park Headquarters, Hatgal.

GPS location: 50°.41.470N
100°.15.007E
date: 21.06.95
time:
description: Original Basecamp Location. North of 95L's camp. N of lagoon Top of mound, dry limy scree about 15cm soil, dropping down to wetlands supporting Trollius, yellow Pedicularis etc. wild dill on shingle beach. Some litter observed and two campfire sites.

GPS location: 50°.39.021N
100°.14.775E
date: 21.06.95
time:
description: 95L's Tourist Camp. Located on small projection about 10km from Hatgal. 4 *gers*, 1 large communal *ger* with kitchen, wooden latrine etc. Satellite dish & television also has radio.

GPS location: 50°.31.69N
100°.12.71E
date: 26.07.95
time: 10:10am
description: Tomasukh's home. East side of lake. 1 wooden structure, summer residence. 37 horses. goats, sheep and yaks [30] several small corrals. large wooden fence stretching up mountain to protect against wild animals, built by the National Park. Single family unit, 4 children.

GPS location:

date: 26.07.95
time: 10:50am

description: 2km SE of Tomasukh. Winter residence. 2 animal shelters - obviously bring *gers* with them. No solid house. Large fenced-off areas and 2 small corrals.

GPS location: 50°.28.80N
100°.11.62E
date: 26.07.95
time: 11:30am
description: Children's Holiday camp. 12 wooden huts with fence. 1 *ger* next door, people living in the hut. Wire fence. View of Hatgal and petrol tanks. Small corral outside. Electricity/telephone wires - useable?

GPS location: 50°.28.75N
100°.12.03E
date: 26.07.95
time: 11:40am
description: Wooden house, just East of Holiday camp. 2 small animal shelters with small corral surrounded by large enclosure. 1 family.

GPS location:

date:
time:
description:

Georeferencing Points

GPS location	50°.51.19N
	100°.10.12E
date:	23.06.95
time:	10:53am
description:	Orondich mountain. Bearing to island 58°. Altitude 2848m

GPS location:	50°44.43N
	100°08.22E
date:	29.06.95
time:	12.45pm
description:	Ongolock-ich

GPS location:	50°.28.14N
	100°.24.76E
date:	24.07.95
time:	2.15pm
description:	Road crosses the river on the E. side of the lake. stream has water in it in July.

GPS location:

date:
time:
description:

Research Points

GPS location:

date:
time:
description: Turning. Open meadow under larch forest. Anemone and Trollius dominating. Entering the valley.

GPS location:

date:
time:
description:

[I] Published Material

Introduction of GIS for Tourism Management in the Khuvsgul National Park, Mongolia

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Abstract

As described by Fielding (1995:p. 6), the Khuvsgul region of Mongolia is facing both transitional problems caused by the closure of the Russian borders, and an increase in tourism to the region, each of which has a significant economic influence upon the local people. Khuvsgul supports a nomadic pastoralist culture where local people move with their animals to different grazing areas each season. Over a number of years these movements may cover substantially the same area, although they depend largely upon the structure of the family unit, and the climate.

In addition to these influences, Khuvsgul is constrained by its designation as a Protected Area which prevents certain types of industrial development from taking place. To address this, and to increase the stability of the economy of the region, tourism has been identified as a potentially lucrative industry, with a focus upon "*ecotourism*" - seen as being environmentally friendly and non-polluting by the national park administration.

Introduction to the Region

The recent change in political structure of Mongolia (Figure 1.1) has closed the Russian borders to trade - previously the major trading route - and a thriving black market economy is now supported across the Chinese border, exploiting the trans-Siberian rail link between Ulaan Baatar and Beijing. Restrictions on this trade are not strongly enforced, as it is the main source of the western goods currently on sale in Ulaan Baatar (Boldbaatar, 1995).

The Mongolian Government is looking for other potential sources of foreign currency, including exploiting its oil reserves, exporting cashmere and leather, and taking advantage of the tourism market. Tourism is widely regarded as an economic stimulant that can aid Mongolia in gaining international funds and recognition. To this end, the Mongolian government is encouraging what it terms 'ecotourism' in each of its thirteen 'state reserves'.

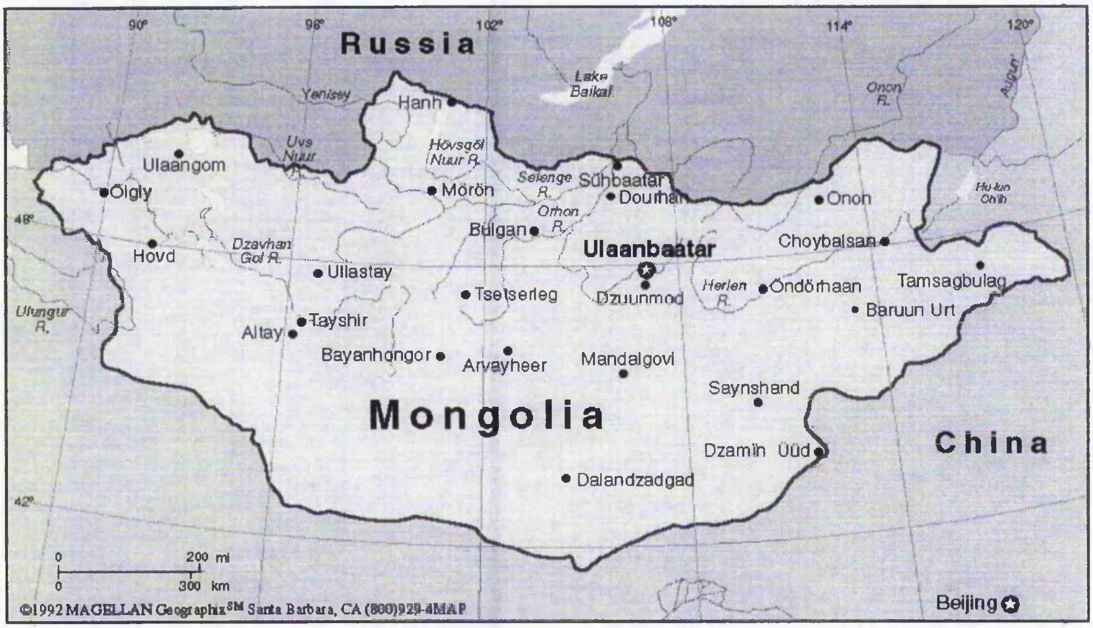


FIGURE 1.1: Mongolia

This research is concerned with the management of tourism development in one of these reserves, the Khuvsgul National Park (Figure 1.2). Khuvsgul is situated in the far north of Mongolia, bordering Russia. The park serves to protect Khuvsgul lake and surrounding mountain ranges which form the habitat of several endangered Mongolian mammals, including Musk deer (*Moschus moschiferus*), Brown bear (*Ursus arctos*), Ibex, (*Capra sibirica*) and Argali (*Ovis ammon*) (State Committee CCCP *et al*., 1989). The area of interest, which includes Khuvsgul National Park, is defined by the longitude and latitude 49°53' - 52°00' North and 99°00' - 101°56' East, which in total describes around 47,500 km^2.

The underlying geology of the region visited by the research team consisted of metamorphosed mudstones and shales dissected by igneous intrusions in the form of towers and pipes. An isolated area of phosphite deposits was located about 2km to the north and supported a slightly modified vegetative composition. Lake Khuvsgul is situated at an altitude of 1730m and the surrounding peaks reach 3,000m or more. Vegetation is dominated by sub-alpine and alpine perennials, interspersed with grassy marshlands adjacent to the lake, and where grazing has occurred. The growing season extends over two months, from mid-June until mid-August, when the rainy period of the year commences.

Khuvsgul is the wettest province of Mongolia, receiving on average, 350mm of precipitation per year In the region covering the majority of the National Park. The figure can reach 550-600mm on some of the mountain ranges, this falling mainly during the autumn rainy season. In January, the average temperature falls to -21°C across the majority of the National Park causing the lake to freeze (State Committee CCCP *et al*., 1989)

The proximity of Khuvsgul to the Russian/Mongolian border has been responsible for the prosperity of the region in the past. Hatgal was regarded throughout Mongolia as the industrial city of the north, as it supported a thriving community of about 6,000 people, many of whom were employed in the sawmills. Recently, since Mongolia's independence, this border trade has ceased and many of the industries associated with Hatgal have had to close due to economic pressures. The transition of the region into a National Park has focused greater attention on environmental impacts; and polluting industries and practices.

(State Committee CCCP *et al.*, 1989)

FIGURE 1.2: Khuvsgul

The nearest airport is at Murun, 150km to the south of Hatgal (about 2.5 hours by jeep, 7 by truck along the roads). Roads are little more than compacted tracks and only remain passable during the dry months of the summer. By late August, they are muddy swamps, intersected by gullies which are too wide and deep to be crossed when they are flooded. the west side of the lake is effectively cut off from Hatgal during the rainy season, since the only road has to cross one of these washes.

Local people practice a class of semi-nomadic pastoral farming which operates barely above subsistence level in the majority of cases. Most families farm a mixture of cows, sheep, yak, *heinik* (a sterile cow/yak cross), goats and horses.

Given that a high profile is attributed to the development of tourism in this region, there is a real potential for environmental degradation through disruption of grazing and loss of habitat(s). It is true to say that the patterns of nomadic movement and the amount, frequency and type of grazing by different animals, all contribute to the diversity of the vegetation in this region and therefore, to certain aspects of wildlife distribution. The inclusion of permanent tourist sites that disrupt these grazing patterns, and the movement of tourists through the park creates a particular management problem that can only be analysed by taking account of a variety of data.

In order to make decisions about how tourism should be managed, it is required that a database is compiled, comprising information about the physical environment, the local people living in the park, and the category of tourists that are likely to be attracted.

Of course this depends highly upon the accuracy and reliability of the data in the database, and for regions like Mongolia, this is likely to be a limiting factor in its construction. Data may not be available, may be 'secret' or simply may not have been collected in any scale beneficial to the GIS.

Aims and Objectives

A management plan has now been drawn up by the local national park management officials and the UN Biodiversity project (McKlusker & Tomasukh, 1996). The plan outlines the current status of natural resources in the park and suggests areas of focus for management, with an appropriate timescale.
The plan states needs as:-

1. "Khuvsgul lake basin is a National Park under state protection, therefore environmentally sound activities are to be conducted in Khuvsgul National Park in terms of the law on protected areas.

2. Identification of both short and long term objectives of state and local administrative institutions operating in Khuvsgul National Park and co-ordination of their objectives.

3. The most effective and appropriate management of Khuvsgul Centre development in the close future.

4. An appropriate annual planning to obtain required funding, trained staff and equipment for Khuvsgul National Park due to current status of their shortage."

This research will address issues pertinent to sections 1, 2 and 3 of this list of needs by collating environmental and social data about the National Park and integrating it into a computerised database. This GIS will provide the basis for decisions to be made upon the environmental effects of tourism development and other activities. The database may highlight certain spatial regions or development problems, and thus contribute to the construction of long and short term objectives. As a tool for management, its role in the efficiency of the overall development strategy will also be under consideration.

Introduction to Tourism Management.

The data required to construct a GIS capable of the analysis are outlined in Table 1.1. This is by no means an exhaustive list of information, but merely serves as an indication of the types of data that would need to be collected - in order to allow the GIS to serve as a decision support tool.

Type	***Sources***
Environmental	
Base maps	Digitised from 1:100,000 maps
Climate	Khuvsgul Atlas
Digital Elevation Model	Construct from digitised maps
Geology	Khuvsgul atlas/Geological Institute
Landuse	Community Survey (1996)/National Park
Location of campsites	Community Survey (1996)/National Park
National Park boundary	National Park
Position of trails and attribute data about usage	National Park
Potential animal distribution (by animal)	Complementary Expedition research (1995/96)
Satellite Data	USGS/WebGlis
Type and availability of fuel resources	Satellite imagery
Vegetation	Satellite imagery/Khuvsgul Atlas
Water resources	Basemap
Cultural and Community	
Dependence upon National Park resources	RRA (1995)/Community Survey (1996)
Extent of education available	Hatgal Governor
Extent of nomadic movements	Community Survey (1996)
Farming practices and patterns	Community Survey (1996)
Location of settlements	GPS
Numbers and location of people	GPS/Community Survey (1996)/Hatgal Governor
Numbers of livestock	Community Survey (1996)/Hatgal Governor
Occupations	Community Survey (1996)/Hatgal Governor
Perceptions of the environment	RRA (1995)/Community Survey (1996)
Perceptions of the National Park	RRA (1995)/Community Survey (1996)
Perceptions of tourism	RRA (1995)/Community Survey (1996)
Position of resources (e.g. NP HQ)	GPS
Religion	RRA (1995)/Community Survey (1996)
Structure of the community	RRA (1995)/Hatgal Governor
Types of settlement	RRA (1995)/Community Survey (1996)
Tourism	
Activities participated in and where	GPS/Tourist Companies/Tourists/Community Survey (1996)
Amount of money spent in the region	Tourist Companies/Tourists
Availability of food and resources required per tourist	Tourist Companies

Average length of time stayed	Tourist Companies/Tourists
Numbers of tourists in the region	Tourist Companies/Tourist Survey
Potential tourist bed space in the region	Tourist Companies/National Park
Status and capacity of litter disposal and sewage facilities	National Park

TABLE 1.1: Information Required and Potential Sources

How does tourism management usually occur, why would GIS be advantageous?
In order to examine how GIS might help manage tourism, it is important to define what we mean by tourism. Tourism has been defined by Przeclawski (1993, p.10) as

> "the sum of the phenomena pertaining to spatial mobility, connected with a voluntary, temporary change of place, the rhythm of life and its environment and involving personal contact with the visited environment (natural, cultural or social)."

This then defines tourism as having some potential measure of contact with both the natural and the cultural environments - and therefore having some influence upon the management of the National Park. Impacts are difficult to define. How can a cultural change be quantified - or even determined to be positive or negative. As a result, the community has often been omitted from traditional management plans, as this type of data has been difficult to integrate.

The tourism infrastructure of Khuvsgul exists in response to changing demand. Since Khuvsgul is at the beginning of its destination lifecycle (Butler, 1980), it is presently planning its tourism development around the provision of services for what it terms "Ecotourists". However, the nature of tourism to Khuvsgul will change over time as the character of demand changes.

Figure 1.3 illustrates the components of the tourism concept. Characteristics of the tourist (tourist types) and destination characteristics act upon the tourism product, influencing destination, pressure generation and carrying capacity. These all interact to generate tourism impacts (these may be divided into economic, physical and social, but these are not exclusive and are linked).

Impact upon a particular spatial area is therefore controlled by both the destination characteristics (supply) and the characteristics of the tourist (demand). Although environmental impacts are generally confined within Khuvsgul, economic and social impacts may have wider implications through trade routes and "social networks" (Sneath, 1993). In order to address these impacts, controls depend upon funding availability, management strategies and policy enforced, the information available to base decisions upon and the engineering controls viable to physically control impact.

Impacts upon the characteristics of Khuvsgul change the supply product in terns of its physical and cultural environment, and therefore reflect upon the demand for the product. This 'development' of a region can be controlled or mitigated to some degree by an understanding (and monitoring of) impacts through an effective management policy with adequate controls and goals.

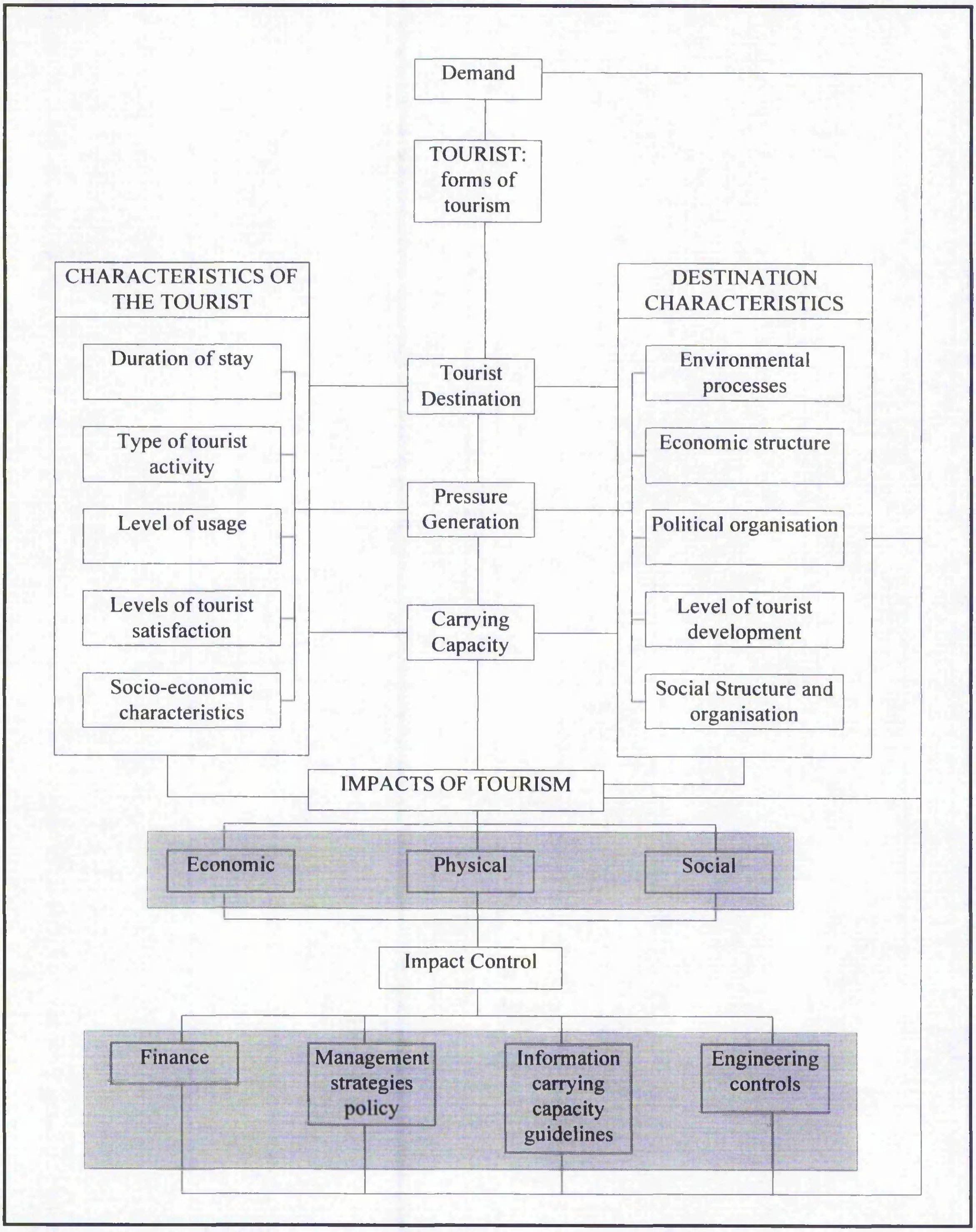


FIGURE 1.3: A conceptual framework of tourism
(Modified from Weiler & Hall, 1992)

Sustainable Tourism and Management
"Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987)

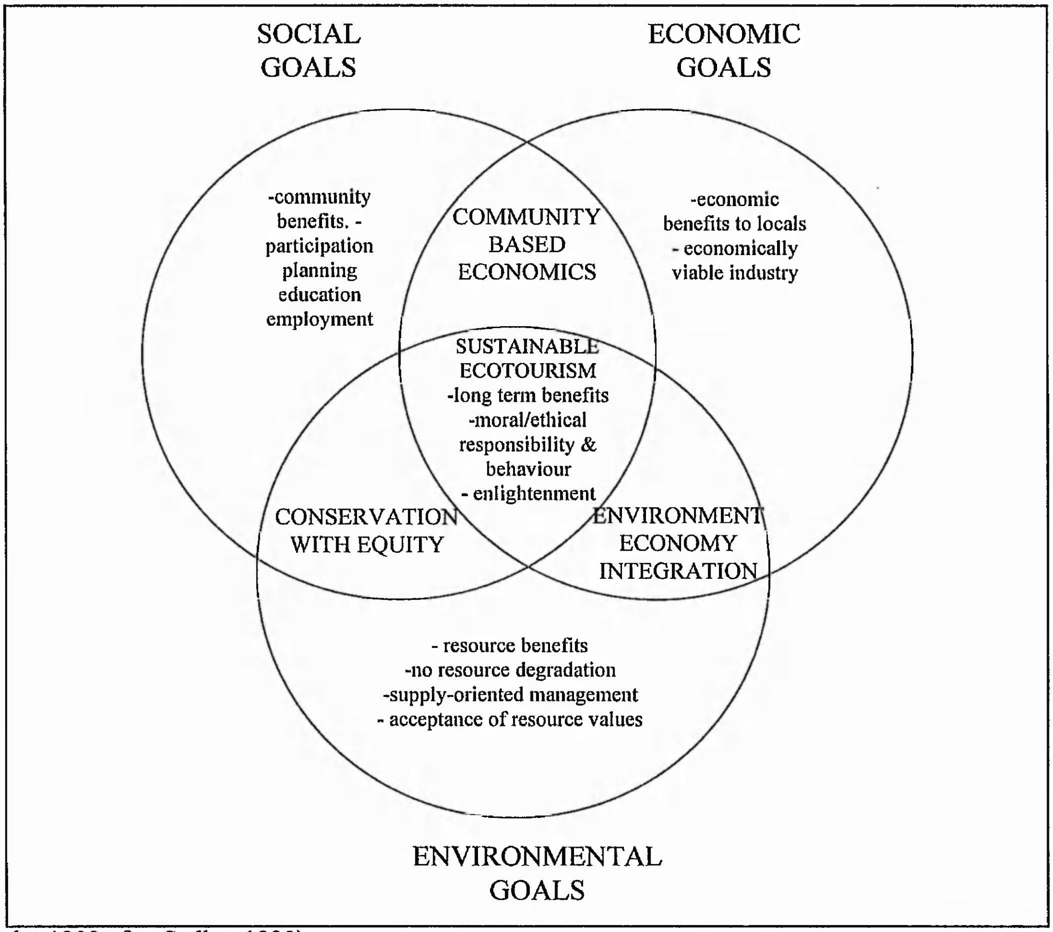
The problem arises however in determining the degree and direction to which tourism should move in a region and allow adequate monitoring of the physical and social environment in order to target management philosophies effectively. It is difficult to establish the degree to which acceptable degradation may occur, to compromise this with economic requirements and also to measure and monitor degradation sufficiently precisely to allow tourist numbers and values to be linked with environmental and cultural changes. The sustainability of the host culture is much more difficult to guarantee than the environment as it is a valued state. Who is to say that one particular aspect of a culture is more important than another, and who can predict the changes in culture that would have occurred with only half the number of tourists, or with a different type of tourist and infrastructure.

This concept is termed 'Carrying Capacity'[1] and is difficult to define and attach values to. What normally occurs is a 'guestimate' based upon available evidence and expert knowledge of the decision-maker. It must also be realised that carrying capacity is not a static figure, but varies with the environment, time of year and changing culture of local people. It also depends upon the usage to which the environment is going to be put and the activities which will take place there. Stankey *et al.* (1978) describe carrying capacity as the ability of the physical-biological environment to withstand recreational use. It may also be used to express the amount of use that is consistent with some measure of quality in the recreation experience.

However, tolerances can vary dramatically, often within a very small spatial and temporal span. This must be taken in context when generalising about a region for the purposes of recreational assessment. Tourists visiting an area for its wilderness values would not appreciate encountering many other tourists, and so the carrying capacity of the land for that activity would below. A forested area would have a higher carrying capacity for the same spatial area, as the physical presence of trees would cut down the viewshed for each tourist group. Sustainability is a part of ecotourism that compromises impacts upon different aspects of the geoecology of a region in order to achieve social, economic and environmental goals (Figure 1.4)

There is a continual struggle between each of these three aspects; and their individual importance will be decided by the legislative bodies involved in managing the region, in addition to the culture of the people and their attitudes to environmental issues and the need for economic growth. However, sustainability involves a carefully considered management policy to maximise economic output over the greatest period of time within environmental constraints. Although sustainability may not generate the amount of revenue that other types of tourism do, by definition it will generate for a much longer period of time, making it overall the most productive form of tourism in the long term.

[1] Carrying capacity can be defined in terms of making a judgement as to what constitutes acceptable change. The LAC management system (Stankey *et al.* 1978) allows goals to be defined which management then achieves, rather than allowing perceived capacity to define goals.



(Wight, 1993 after Sadler, 1990)

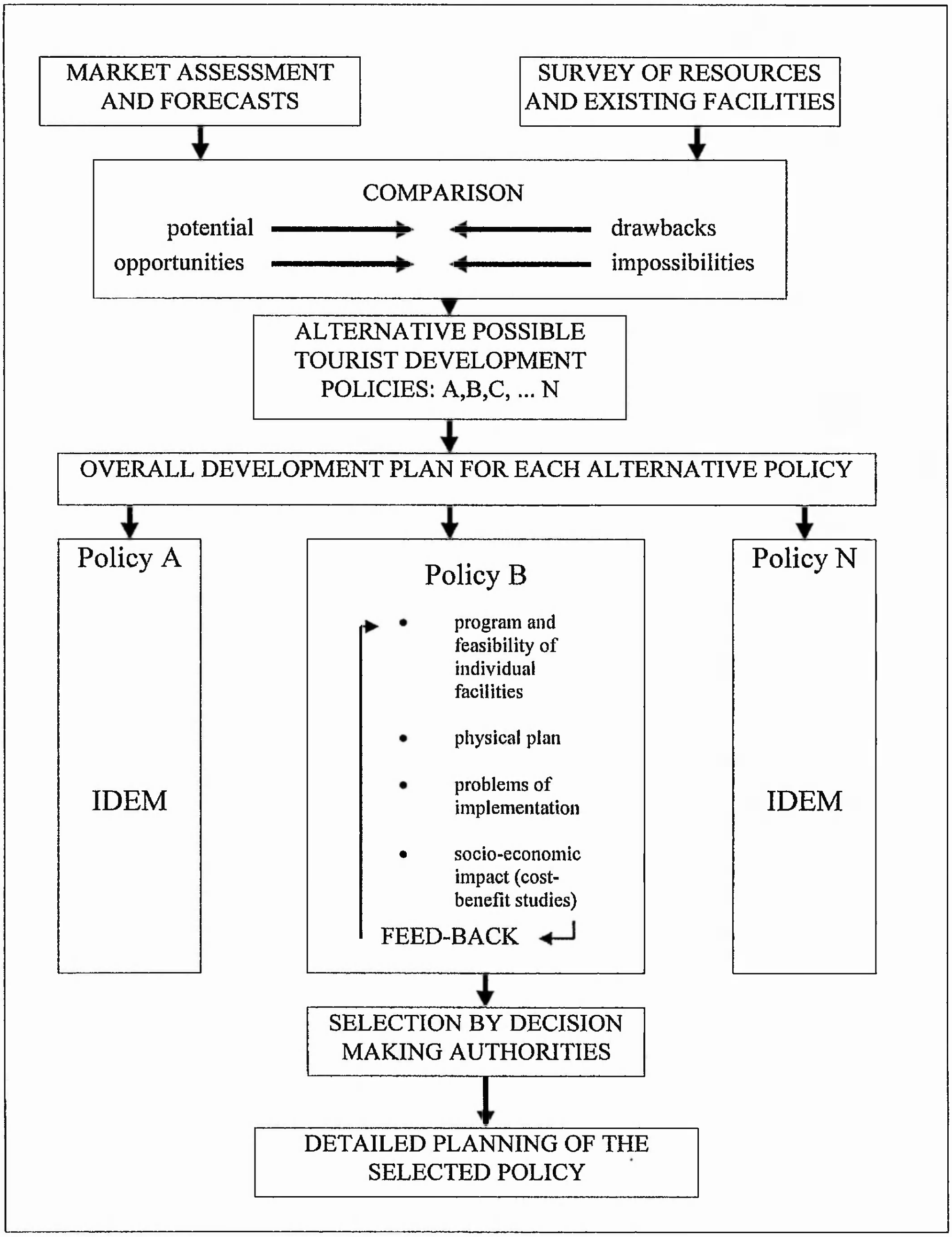
FIGURE 1.4: Sustainable Ecotourism Values and Principles Model

Traditional Management Plan

Tourism management plans are invariably constrained by the funding and manpower resources that were open to them at the time of definition. Figure 1.5 outlines the processes involved in a traditional management plan. After the survey of resources and market forecasts, all further conclusions and planning are based upon these results. In a rapidly changing tourism environment, the data can be redundant even before the management plan has been implemented.

Additionally, decision-making can only take place using the available data. As previously discussed, it may be very expensive or complex to manually integrate all data, so there is a tendency to overlook data that cannot be easily taken into account at the comparison stage, and in order for new information to be taken into account the whole process needs to be re-run. this is costly, and leads to time limits being attached to management directives, the five year and ten year plans.

A GIS stores all data in a form that can be interrogated with respect to other data, and can be updated continually. This allows managers to have a flexible plan that takes into account changes as they occur.



(Gunn, 1995)

FIGURE 1.5: Traditional Management Plan

Data Acquisition

Two phases of fieldwork in Khuvsgul took place, the first phase during June to August in 1995, and the second in the same period during 1996. Environmental data was gathered from maps provided by the National Park administration, field research undertaken by the Russian-Mongolian Expeditions to the region over the past twenty years, and recent data collected by Discovery Expeditions volunteers (Bennett & Harper, 1995).

Culture and community data was to be collected from people living in the National Park, in order to provide a basis against which tourism management and development could be compared. The manner in which this took place was firstly, to gather knowledge of the culture of the community in Khuvsgul. This was achieved by the two phases of fieldwork taken place during 1995 and 1996.

During the first phase of fieldwork in 1995, a Rapid Rural Appraisal was conducted in a small area of the National Park. A set of semi-structured interviews were carried out among local people, tour operators, and key informants within the National Park management. It was intended that a relaxed atmosphere be generated with conversation appearing to follow a natural course, while at the same time, asking relevant questions in order to gauge responses, following outlines suggested by McCracken *et al* (1988). Notes were made at the time of the interview, and subsequently, a number of key themes extracted. A sample of around twenty families from the south and west of the park and several tourist camp managers and National Park Administrators were interviewed in order to determine the accuracy and depth of cultural data that could be extracted and input to a GIS.

The second phase of fieldwork, during 1996 involved the distribution of one hundred and fifty copies of the community survey response sheets, and the same number of visitor questionnaires. Visitor questionnaires were distributed to each tourism camp in the region by the head ranger, while the community survey was in progress.

Questions for the community survey were derived partially from work done in the MacArthur project, Cambridge (Sneath, 1996), and partially from the RRA, undertaken during the first phase. As the overall aim of the survey was to contribute data to a GIS, questions were formulated along the lines of locating the movement of families during the year, and identifying activities important to their lifestyle, in an attempt to focus upon those families, and in particular those activities which might be most influenced by tourism.

The hardware and software suitable for Khuvsgul depends upon the availability of an energy source, the physical environment in which they are required to work, the hardware requirement for the software, integration with hardware and software in other departments, and the personnel who will be required to maintain and run the system. There is at present no reliable source of electricity in the Park, besides privately owned diesel generators. Electricity is sometimes available in winter, but depends upon the availability of fuel. There are plans for a Hydro-Electric Power Station (HEP) which will be situated a few kilometres downstream from Hatgal and which is to supply the town of Murun primarily, but will also provide energy for Hatgal. In the short term it is envisaged that a generator could power hardware at the Park headquarters in Hatgal before a permanent source comes on line.

For the purposes of data collection, solar panels were tested in the field. During the first phase, a Solarex MSX30L panel was tested to determine its efficiency at providing power for two GPS units and an Olivetti laptop computer. A 12V shunt was wired between the panel and the 12V battery recharger, as the panel generated up to

21V depending on the intensity of sunlight. The battery recharger was able to charge four AA-type batteries in two hours, but required monitoring and manual slowing of charging as the batteries seemed to be charged too fast at times. Charging worked best in a shady position, over a longer period of time, but the panel's size and rigidity meant that it was better suited to a base-camp or ger, perhaps to be used by a ranger for recharging each day.

The second phase of fieldwork was entirely mobile and conducted on horseback. A lightweight, flexible panel was tested, which could be tied to the back of a rucksack, or on top of the pack on the packhorse. Despite rough treatment when the pack was being loaded and unloaded, it performed well, and provided enough charge to maintain the GPS and Kalidor penpad computer.

A multi-user platform was not felt to be required in Khuvsgul as high computational analysis and modification of the database could take place in Ulaan Baatar where ARC/INFO GIS runs on a SunSparc-20. It was felt that a GIS in Hatgal would be PC-based where either ARC/INFO or ARC/VIEW was running. This would remove the need for a dedicated system administrator which is a requirement of management-hungry UNIX based systems.

As much of Mongolia is able to receive and send Email, it is envisaged that this facility will extend from Murun to Hatgal at some point, and the PC could be linked as part of a Wide Area Network (WAN) to Ulaan Baatar, where data exchange could take place.

Included in these proposals is the need for the system to function within the existing management structure, and to a budget relevant to the situation. At Khuvsgul, costs will be kept lower by defining the system as PC-based.

Data is likely to represent around 50% of the projected costs for the project. Wages are low in Mongolia which makes data collection, or digitising from existing maps relatively cheap, compared with the costs of equipment and staff retraining. Satellite information is available at a cost of $400, although this dates from 1974, and therefore does not show changes in the landscape since independence and the tourism developments that have occurred since 1992.

A PC base calls for less personnel training, and using a graphical environment, for example ARC/VIEW, makes analysis more easy to relate to and to complete. The integration of this hardware and software with that of the Ministry of Nature and Environment in Ulaan Baatar would mean that decision making could take place between managers on-site, and those in the capital in a more meaningful way. The feeling of remoteness suggested by park officials could be overcome, as they would not be receiving instructions from Ulaan Baatar, but would be actively participating in the management process, and therefore lead to a sharing of data between sites.

Further work will involve the integration of environmental data from maps and research reports into the GIS. This will be achieved by scanning the maps as images and then digitising them on screen, using MapCAD software. A base map will be prepared from the best available data. Cultural data will be integrated with the base map using GPS measurements, so that responses to the community survey can be linked to each GPS point in the database, and analysed with the environmental data.

A series of "what-if" scenarios will be modelled, showing potential effects and conflicts of proposed developments to both visitors, local people and the environment.

Preliminary Results

The community survey highlighted some potential areas that the GIS could be used to explore. The gathering of medicinal plants is widespread and there is local concern about their declining habitat. The GIS could be used to determine where these habitats are likely to occur and then to model the effects of different development and management plans on these habitats. The results of the survey were greatly affected by whether the respondent was male or female. Many women tended to defer to the opinions of other men in the ger, even if they were just visitors and not part of her family. In one case, a man travelled to meet the researcher in order to modify the responses his wife had made in his absence.

Other important concerns are the effects of hunting in the region. Prior to the designation of the region as a Protected Area, local people organised group hunting of wildlife such as wolf and bear. Animal pelts remain an important part of local culture. There are now heavy penalties imposed in an attempt to protect wildlife within the Park, but in may cases, hunting represents an important source of meet during the summer months. It is important that the National Park generates some form of monitoring strategy to understand the effects of this, and whether tourism will have any effect upon hunting patterns and wildlife distribution.

Most importantly, the GIS will hold information on the environment, local people and tourists, and may go some way towards representing the views of an indigenous community within the National Park.

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[J] Original List of Questions

List of Questions from MacArthur Project

1. What are your job responsibilities?
2. Can you give me some demographic information for Hatgal?
3. How many children do you have?
4. Where do you move during the year?
5. How long have you lived here?
6. How many tourists do you cater for?
7. What are the main problems that face Khövsgöl National Park?
8. What are the main problems here?
9. What is the state of communications in Hatgal?
10. What is the state of environmental awareness in Hatgal?
11. What is the state of electricity in Hatgal?
12. Where do you move during the year?
13. How long have you lived in this region?
14. Are there ever any problems with other people using your land?
15. Have there been many changes?
16. Are there any fables or tales about the region?
17. What livestock do you have?
18. What are the woman's main duties each day?
19. What are the man's main duties each day?
20. Do you have any traditional remedies for ill-health?
21. Do you use the medical service or do you use herbal remedies?
22. How many children do you have?
23. How many children would you like?
24. What jobs would you like to see them doing?
25. Where do you get your fuel from?
26. What happens to the rubbish that is produced?
27. Is there any hunting in this area?
28. Who is hunting?
29. Which animals are being hunted?
30. Do you hunt?
31. Which animals do you hunt?
32. Is there a problem with hunting in the National Park?
33. Are there any restrictions on hunting?
34. Are people able to hunt in this region?
35. Are there any problems with Ecotourism?
36. Are the tourist impacts here good or bad?
37. Do you see many tourists here?
38. How many tourists do you cater for?
39. What is the average length of stay?
40. What activities can tourists take part in?
41. When is your tourist season?
42. Has the National Park made any changes to your lifestyle?
43. What changes have occurred in the region since its designation as a National Park?
44. How do you feel about the National Park?
45. Do you have a positive or negative view of the National Park?
46. How do you feel about the National Park?
47. What are your main job responsibilities?

[K] GIS

This section is concerned with how the GIS records and stores a model of reality - in this case, the maps and other data considered in Section 5.2. Figure K.1 shows the sequence of transformations and transactions that take place when creating a model of reality. Level one abstraction involves the classification of each feature into one of a series of spatial entities, either points, lines, areas, networks or surfaces. Level two is an abstraction of these entities into a digital form, recognisable by the GIS - in this case vector or raster format and discussed later. Level three abstraction is the storage and recording of these digital forms in a number of ways, so as to preserve topological and attribute information linked to them. The construction of databases to deal with this data storage is then discussed. From level one to level three, there is increasing abstraction, simplification, mechanisation and generality.

K.1 Abstraction of Reality (Level 1)

The abstraction of reality into a number of features is largely a function of human perception, concerning the scale at which the abstraction is being performed. For example, at a larger scale, a group of trees may be represented as a series of points, each having the attribute "tree". At a smaller scale, this group may be represented as an area, having the attribute "woodland".

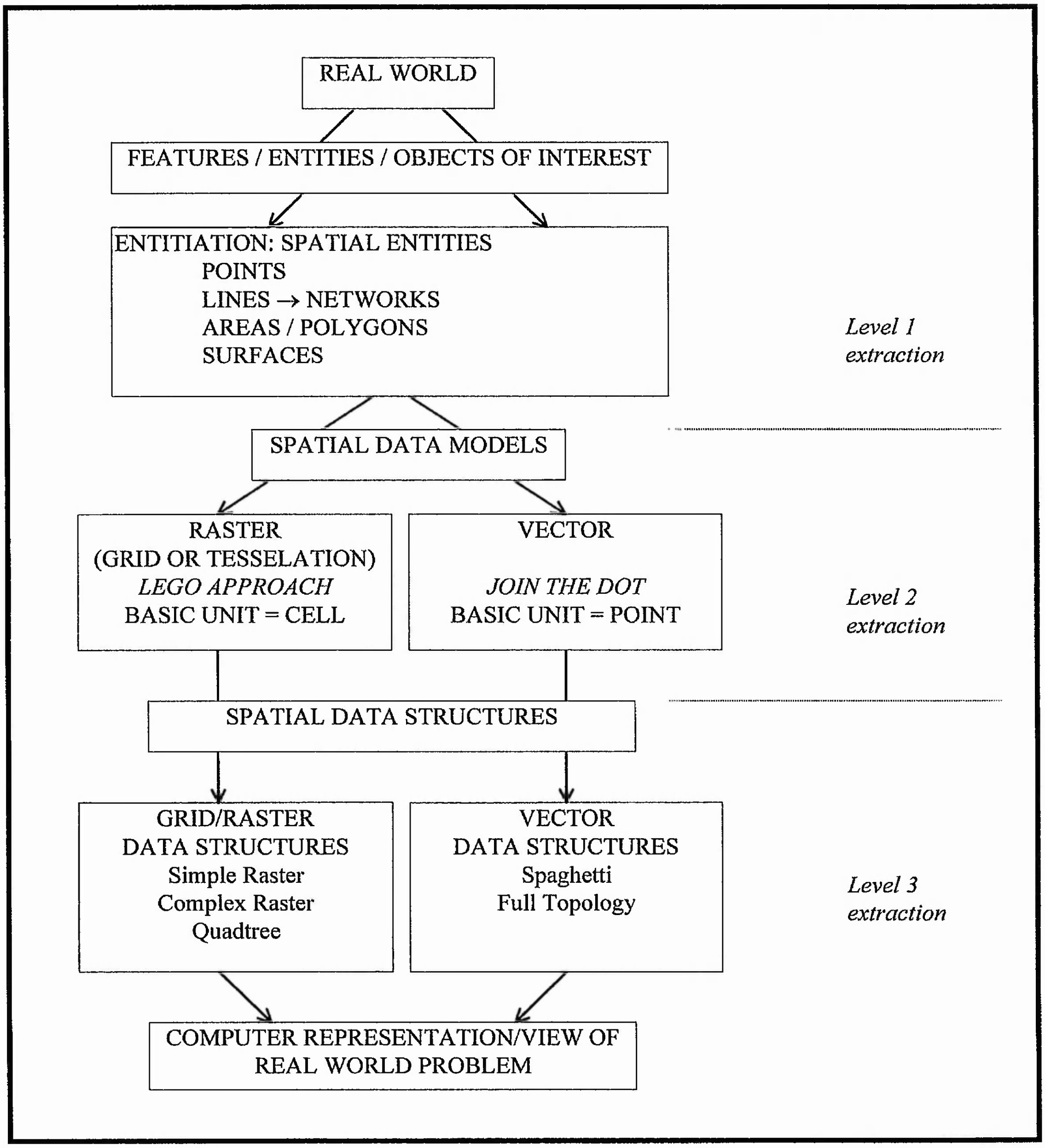


FIGURE K.1: Spatial Geographic Models for the Computer Environment

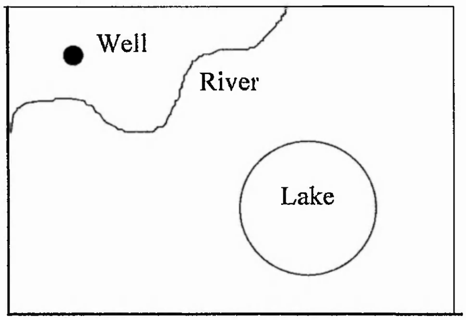


FIGURE K.2: Level 1 Abstraction

The four main types of object are points, lines (and networks), areas and surfaces. Points have no dimensions, and are represented on Figure K.2 as the attribute "Well". Lines and networks have one dimension and are represented in the same figure as "River". Areas and polygons have two dimensions and are represented as "Lake". Surfaces have three dimensions and are defined by other data; i.e. a terrain surface cannot exist without height data.

Points can also exist in a three-dimensional structure, (for example the location of an ore body in a large geological structure), but lines will no longer necessarily exist in a two-dimensional plane, but may follow a three-dimensional path through a volume. (Gatrell, 1991). Thus, it is also important to distinguish between the topological dimension associated with the object, and the dimension of the space within which it is located.

Perhaps the most important feature of a GIS is that it is able to take account of the topology of the features, that is, the points, lines and areas can be defined in relation to each other. Table K.1 outlines the main relationships between the different types of spatial object.

	Points	Lines	Areas
Points	• is a neighbour of • is allocated to	• is near to • lies on	• is a centroid of • is within
Lines		• crosses • joins	• intersects • is a boundary of
Areas			• is overlain by • is adjacent to

(Gatrell, 1991)

TABLE K.1: Relations Between Classes of Spatial Object

K.2 Raster and Vector Data Models (Level 2)

Level 2 abstraction occurs when these points, lines and areas are represented in a digital format for the GIS. There are two main methods of modelling this; Raster and Vector.

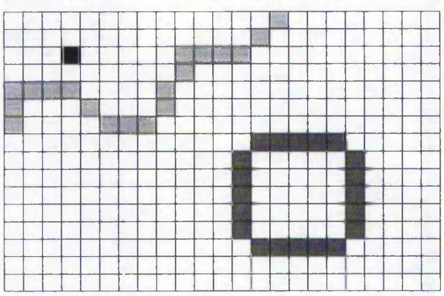


FIGURE K.3: Raster Data model

The raster data model (Figure K.3) consists of a grid of cells, which are generally (but not always) square. Each cell is located by its row and column number and may be given an attribute. Points are the dimensions of a single cell, lines are a number of cells linked together with the same attributes, and areas are a group of cells with the same attributes. The amount of data that is stored is large, as each cell has to have a value, so the total number of data units in a file, is equivalent to the product of the number of rows and the number of columns.

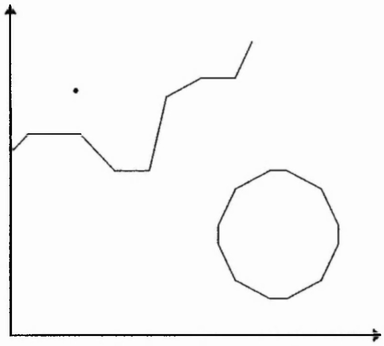


FIGURE K.4: Vector Data model

The vector data model (Figure K.4) consists of a series of (x,y) co-ordinates which are then linked by lines. Points are represented by a single (x,y) co-ordinate (node), lines by a number of linked nodes, and areas by a line which shares the same node (start and end point). The total amount of data that has to be stored is less than that of raster, as each file contains only the (x,y) co-ordinates for the nodes in the dataset.

Different GIS packages tend to be based upon either raster (e.g. IDRISI) or Vector (e.g. Arc/Info), although many are capable of handling and translating data from either the raster or vector datamodel. Whichever model is used, it must be recognised that it is a relatively simple task to convert vector to raster, but more complex to translate raster to vector (Carver & Brunsdon, 1994) (Section K.3).

K.3 Raster and Vector Data Structures (Level 3)

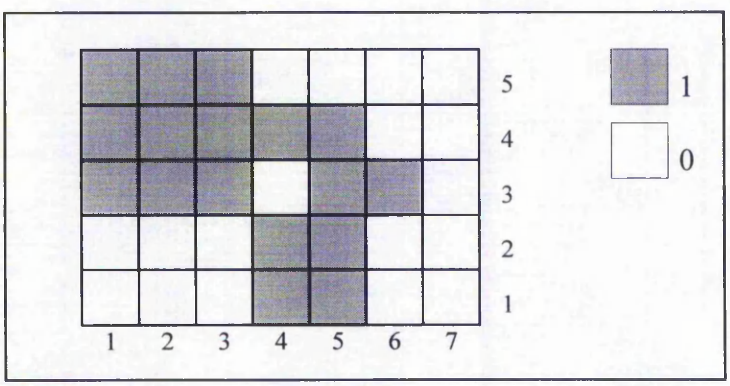
This section deals with how raster and vector data structures are stored within the GIS database. As previously discussed, one of the characteristics of the raster data model is that it generates large file sizes. Raster data structures are therefore concerned with the compression of the dataset in order to increase processing and display times.

A **simple raster** model occurs where only one feature is considered at a time. In the case of Figure K.3 this would generate three grids, the first having each cell with an attribute of 'zero', except for the point feature of interest (the well), which has the attribute 'one'.

The second grid would concern the river, and ignore the well and lake, and so on. If there were two point features which have different attributes, for example a well and a tree, these would have to have different grids. This method is highly inefficient due to the proportion of zero cells which have to be recorded, yet which contain no data.

It follows that a **complex raster** model is one where multiple features can be stored on one grid. This is achieved by a unique number being generated for each different feature. For example, the well may be represented by '1', the stream by '2', the lake by '3' and everything else by '0'. Other features would take numbers '4' and above.

Consider Figure K.3. A total of 35 bytes are required to store this as a complex raster. Data volume could be reduced by using **run length encoding** (Figure K.5). This method involves specifying groups of cells with identical attributes lying together in each row. Thus, for the example, run length encoding would be :-



13 04

15 02

13 01 12 01

03 12 02

03 12 02

FIGURE K.5: Raster Compression Methods

A total of 28 bytes are required to store this data. However, it can be seen that when the data becomes more complex, as in row 3, this method of compression becomes less efficient.

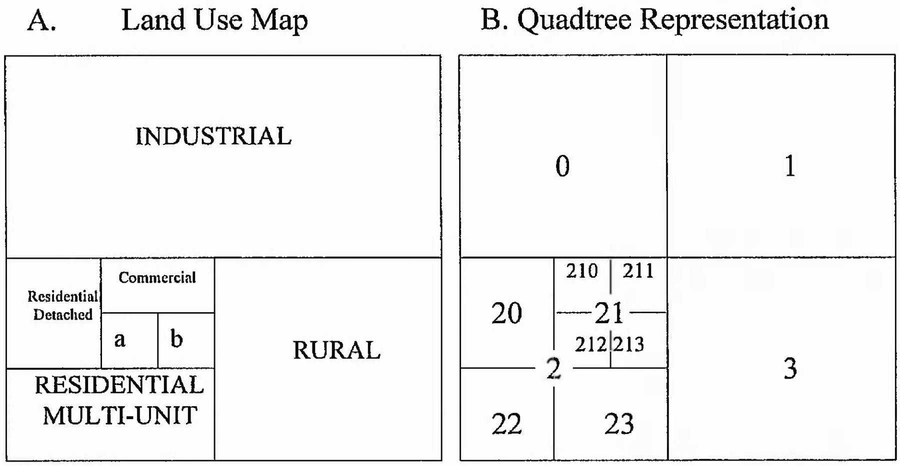
Block coding defines groups of square blocks of the same feature. For Figure K.5, Table 5.3 gives the coding. A total of only eighteen bytes are required for storage of the same raster dataset.

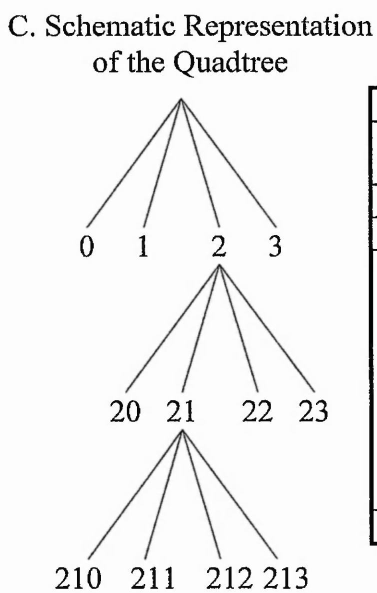
	Location of Southwest corner	
# Cells	Column	Row
9	1	3
4	4	1
1	4	4
1	5	4
1	5	3
1	6	3

TABLE K.2: Block Coding

A third method of compression is **chain coding**, where the cell edges of a feature are recorded. The first figure of encoding represents the direction of travel (where 0 is North, 1 is East, 2 is South and 3 is West) and the second figure represents the number of cells. For Figure 5.12 the encoding of feature (1) might begin at cell (1,3) and continue 0,3 (North, 3) 1,3; 2,1; 1,2; 2,1; 1,1; 3,1 etc. The size of this coding would depend upon the complexity of the outline of the feature.

The hierarchical **quadtree** structure exploits the fact that squares retain the same shape and orientation when subdivided to address the problem of greater complexity in some parts of an image causing a large file to be stored. Figure K.6 illustrates how data are organised in a quadtree. The original landuse map shows increasing complexity of landuse blocks towards the residential (south west corner) section of the map.





D. Table of Attributes

Quadtree Levels			ATTRIBUTES
1	2	3	
0			Industrial
1			Industrial
2			Residential
	20		Residential, Detached
	21		Services
		210	Commercial
		211	Commercial
		212	Community Services
		213	Recreation
	22		Residential, Multi-Unit
	23		Residential, Multi-Unit
3			Rural

(Aronoff, 1989)

FIGURE K.6: The Organisation of Data Using the Quadtree Model.

The data structure is such that the map is divided up into a number of blocks that are as large as possible. Where there are areas of complexity, the larger cells are subdivided until the required resolution is reached. Sections C and D illustrate how this is represented, and how attributes are attached to each spatial unit.

Octree is the extension of the quadtree to cover handling of three-dimensional space, (where the subject has a *z* dimension). This is particularly relevant to 'volume' research; for example geological and atmospheric modelling.

Vector data models are generally of only two types; those with topology, and those without. '**Spaghetti**' data structures lack topology and are simply "a collection of co-ordinate strings with no inherent structure" (Aronoff, 1989). It is a very inefficient model for many spatial analyses, since it does not confer any spatial relationships, which have to be derived from further computation.

The **topological model** does infer spatial relationships with other features, which is useful for network analysis. The basic unit of information is not the (x,y) co-ordinate, but the 'arc' which is a series of points which start and end at a 'node'. A node may also be an intersection point between two arcs. Information is stored about which arcs connect to each node, which arcs make up each polygon, the topology of each arc (its contiguity and connectivity), and finally, the Cartesian co-ordinates which define each arc (a start, intermediate and end point) (AGI Standards Committee, 1994 and Guptill, 1991).

Whereas raster-based systems utilise a grid linked with height data, vector-based systems may use a '**Triangulated Irregular Network**' (TIN). The terrain surface is represented by a set of triangular facets. For each vertex of a facet, a Cartesian co-ordinate giving (x,y,z) components is specified (where x and y are the geographical location, and z is the elevation). Different algorithms tend to calculate the network of triangles in different ways, but in practice, equilateral triangles give the greatest accuracy (Aronoff, 1989).

Terrain parameters such as slope and aspect are automatically calculated for each facet and stored as attributes. TIN models generate more complexity where the terrain demands it, and are less complex in modelling gentle terrain. Raster-based terrain models have a uniform cell size, which can result in over-large file sizes for less complex terrain, and inappropriate modelling of complex terrain.

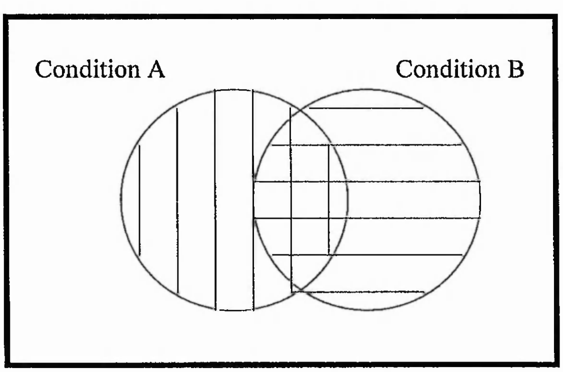
Both raster and vector data structures have their advantages in different situations. Raster is a very simple data structure and, therefore, operations such as overlay (Section 5.4.1) are easy and efficient to implement, unlike vector, where overlay results in 'slivers'. When a large number of irregular polygons is involved, the time taken for processing vector data may be significantly greater than raster. Raster data is also able to efficiently represent high spatial variability as each cell may have a different attribute, whereas vector data must produce a large number of nodes for many small polygons. Should digital imagery, such as aerial or satellite data be required, the raster format is almost a prerequisite for interactive manipulation of the remotely sensed data (Williamson & Lindauer, 1988 and Welch, 1992) with the rest of the database. A vector-based database relies on the use of digital imagery as a backdrop to the vector data, and particular regions of the remotely sensed data must be digitised before complete integration with the database can occur.

However, the raster data model is less compact than vector, and requires a much larger storage space. Data compression techniques are usually employed to overcome this problem. The output of raster graphics is less aesthetically pleasing, as boundaries to objects tend to have a blocky appearance, as they are made up of pixels[1] rather than vector data. The extent of this blockiness is determined by the resolution of the dataset, and therefore the number of pixels, but the greater the number of pixels, the larger the file storage. An increase in resolution may result in unacceptably large files to be stored. Topological relationships are also more difficult to represent using the raster data model.

The vector data model is a more compact data structure than the raster model, but in its turn is more complex. Although topology is more efficiently linked to vector data and, as such, operations such as network analysis are simpler to implement, other operations, such as overlay, are more difficult. The vector model is more closely representative of hand-drawn maps, and can produce graphics to support this.

K.4: Spatial Decision Support System

In a raster-based GIS, each cell is linked to an attribute, whereas vector query depends upon Boolean logic (Figure K.7).



A AND B = Intersection of both circles
A OR B = Whole of both circles
A NOT B = Condition A without intersection
A XOR B = A or B but not the intersection

[1] Picture elements. Data is displayed on a computer monitor screen as a number of pixels. The greater the

FIGURE K.7: Boolean Logic

Overlay is the combination of two or more sets of data. Raster overlay (Figure K.8) is carried out where each cell exactly fits over the corresponding cell of the second dataset. Thus, it is conceptually simple to determine the value of the cell in the new dataset. Overlay can occur by means of "stamping", where one dataset covers another, except where a cell value is zero; "addition", where the sum of the cell values is taken to create the new dataset, and "multiplication" where the product of the cell values is taken. It is also possible to create weighted overlays, or dividing the contents of the cells.

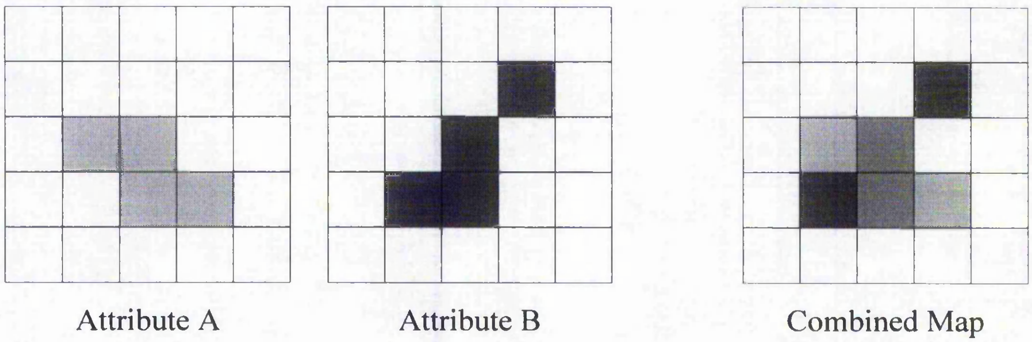


FIGURE K.8: Raster Overlay

Vector overlay creates some different problems. Figure K.9 illustrates two vector polygons, and the resulting overlay. In this case, a number of new polygons are created, and topology must be re-calculated. Vector data models are more complicated and slower to calculate.

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number of pixels, the higher the resolution.

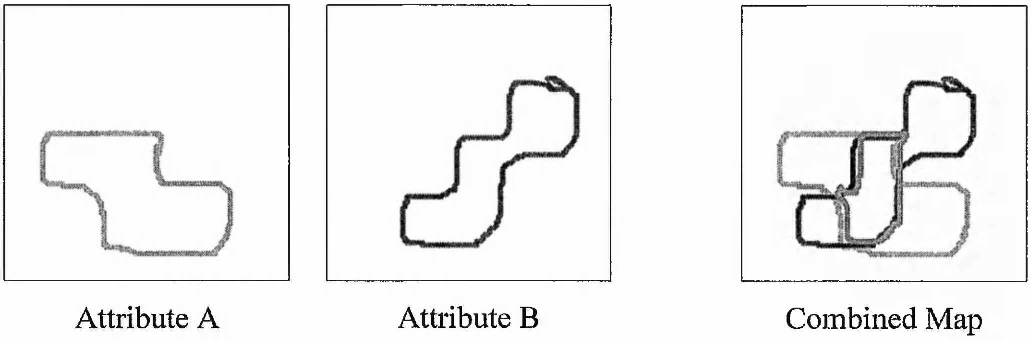

FIGURE K.9: Vector Overlay

Operations which take place across several maps or datasets will be affected by the data with the greatest amount of error. It is important that maps have the same scale, and that this is appropriate. In addition, each dataset must be using the same projection. At large scales, this does not cause a great amount of error, but at smaller scales, distortion is more apparent.

A third type of functions are **Neighbourhood operations** which include the analysis for questions such as "Where are all the places with a certain attribute?". This may be approached by the use of 'buffering', where the creation of zones around certain entities can allow the effects of certain features to be monitored over the maps. In a raster data model, the buffer width may not be at a precise distance, since the position of the buffer is determined by the cell dimensions.

Interpolation is the estimation of values within a specified area, by the use of sampling points. This function is useful in the creation of a surface, which may represent height, or some other variable. The sampling data may be distributed regularly or irregularly, and may not cover every pixel. This may include spot height data found on Russian-produced Mongolian maps of the Khövsgöl region. This point data may be used to interpolate a topographic surface of the region. Complete coverage is only given with remotely sensed data.

Interpolation algorithms can be divided into deterministic and stochastic. The former make an assumption that the behaviour of the surface can be described as a mathematical function, whereas the latter assume that there is some random element or variable that is consistent across the surface. Algorithms can also be global (which interpolate across the whole dataset) or local (which interpolate points within a given area).

Global interpolation methods can be extremely basic, ranging from **line threading**, which is where a line is manually 'threaded' by eye between a range of points. However, this is a subjective method and may lead to abrupt changes at the edge of the database.

A **Trend surface analysis** is a mathematical model which calculates the line of best fit, in either a linear, quadratic or cubic surface, using least squares procedures. This is a stochastic method and may be used with a set of randomly selected data points. An example of a deterministic algorithm is **Fourier analysis**, which was developed by the signal processing industry. The algorithm makes the assumption that there is some form of periodicy across the database, which is unusual in a natural environment. This analysis may, however, have some applications in climatic change modelling.

Local interpolation methods average a defined area, for example, within a polygon. The **moving average method** employs a roving "window" which is focused upon the point to be given a value. This is interpreted to be the average of the surrounding cells in the window, which can be moved around the area until all cells have a value. It may be assumed that the cells on diagonals are less similar than those directly adjacent to the blank one, and in these cases, it is possible to define some sort of weighting system (spatial autocorrelation). This is, however, entirely arbitrary and has a large effect upon the surface produced. In addition, the size of the window can also be manipulated, but should remain within the order of 3-20 pixels.

Thiesson (or **Voronoi**) **polygons** define individual areas of influence around each of a set of points, commonly data from rain gauges. The algorithm assumes that the best information for locations with no observations, is the value of the closest data point. This causes boundaries of influence to be drawn around each known data point. This means that the division of the region into polygons is entirely dependent upon the location of the original samples, and thus the surface produced may be ill fitted to the data being mapped.

Contour generation involves the generation of isolines from a set of data sampling points. It is usually, but not limited to, definitions of surface height, but may also be used to map anything with a z value (for example crime rates and visitor flows.)

The fourth type of two-dimensional analysis is that of **connectivity**. This is a form of topology measurement where contiguity and proximity can be determined, as well as network analysis (for example the total length of all the streams in the target area, or the shortest route from one point to another). Intervisibility, illumination and perspective will be examined under the section of three-dimensional operations (Raper & Kelk, 1991).

[L] FOREIGN INVESTMENT LAW OF MONGOLIA

Unofficial translation

FOREIGN INVESTMENT LAW OF MONGOLIA

The Tax Law of Mongolia contains tax preferences for foreign investment since February 1, 1998.

CHAPTER ONE

GENERAL PROVISIONS

Article 1. Purpose of the Law.

The purpose of the present Law shall be to encourage foreign investment, to protect the investors' rights and assets in Mongolia and to regulate matters relating to the operations of the business entities with foreign investment.

Article 2 Foreign Investment Legislation.

1.Legislation on foreign investment shall consist of the Constitution, the present Law and other Laws and regulations in force which are consistent with the preceding.

2.If the International Treaties to which Mongolia is a signatory provide differently than the present Law, then the former shall prevail.

Article 3. Definition

1.Foreign investment" means all tangible and intangible assets which are invested in Mongolia by a foreign investor, for the purpose of establishing in the territory of Mongolia a business entity with foreign investment or for the purpose of jointly operating with an existing business entity of Mongolia.

2.Foreign investor" means a foreign legal person or individual (foreign national or stateless persons not residing permanently in Mongolia and citizens of Mongolia having permanent residence abroad) who is investing in Mongolia.

3.Mongolian investor" means a Mongolian legal person or individual (citizens of Mongolia and foreign nationals or stateless persons residing permanently in Mongolia) who is making an investment.

Article 4. Areas for Foreign Investment

1.Foreign investment may take place in all areas of production and services which are not prohibited by the laws of Mongolia.

2.Foreign investment may take place in all parts of the territory of Mongolia where performing production and services is not prohibited by the laws of Mongolia.

Article 5. Types of Foreign Investment.

A foreign investor may invest in the following:

i. freely convertible currencies and reinvestments of tugrigs yielded by an investment;

ii. movable and immovable property and property rights;

iii. intellectual and industrial property rights.

Article 6. Forms for Implementing Foreign Investment.

Foreign investment shall be implemented in one of the following form:

i. establishing a holly foreign-owned business entity or a local branch or subsidiary of a foreign enterprise;

ii. establishing a business entity jointly with a Mongolian investor;

iii. investing directly by acquiring shares or other securities of an existing Mongolian business entity using freely convertible currency or tugrigs yielded by an investment, including purchasing shares or other curities which were sold by investment coupons under the Privatization Law of Mongolia;

iv. acquiring rights, conferred by law or contract, to exploit and process natural resources.

Article 7. Purchase of Shares or Other Securities

A foreign investor may, in accordance with the laws of Mongolia, purchase shares or other securities of any business entity operating within the territory of Mongolia.

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CHAPTER TWO

PROTECTION OF FOREIGN INVESTMENT

Article 8. Legal Guarantees for Foreign Investment.

1.Foreign investment shall enjoy legal protection within the territory of Mongolia as guaranteed by the Constitution, the present Law and other laws and regulations in force which are consistent with the preceding, and as guaranteed by the International Treaties to which Mongolia is a signatory.

2.Foreign investment within the territory of Mongolia shall not be nationalized or be subject to unlawful expropriation.

3.Investments of a foreign investor may be subject to expropriation exclusively for public purposes or interests and only in accordance with due process of law, on a non-discriminatory basis and against full compensation.

4.Unless provided otherwise in the International Treaties to which Mongolia is a signatory, the amount of such compensation shall be determined by the value of expropriated assets at the time of expropriation or public notice of such expropriation. Such compensation shall be effected without delay.

5.Losses suffered by foreign investors due to a state of emergency or war in Mongolia shall be treated equally with losses suffered by Mongolian investors.

Article 9. Treatment of Foreign Investors.

Mongolia shall accord to foreign investors no less favorable treatment regarding possession, use and disposal of their investments than that accorded to Mongolian investors.

Article 10. Rights and Duties of Foreign Investors.

1. Foreign investors shall enjoy the following rights:

i. to posses, use and dispose of their property including repatriation of investments, which were contributed to the share capital of the business entity with foreign investment;

ii. to manage or to participate in managing the business entity with foreign investment;

iii. to transfer their rights and obligations to other persons in accordance with the laws;

iv. to promptly transfer abroad the following returns:

a) the share of profits and dividends;

b) proceeds from the sale of their assets or securities and proceeds from the transfer of their property rights to other persons or proceeds from their withdrawal from or the dissolution of the business entity;

v. any other rights conferred by law.

2. Foreign investors shall have the following duties:

i.to observe the laws of Mongolia;

ii.to fulfill commitments which are stated in the Memorandum and the Articles of Incorporation of the business entity with foreign investment;

iii.to implement measures to ensure the protection and restoration of the natural environment;

iv.to respect the customs and traditions of the people of Mongolia.

CHAPTER THREE

OPERATION OF BUSINESS ENTITIES WITH FOREIGN INVESTMENT

Article 11. Business Entity with Foreign Investment.

1.A business entity which is incorporated under the laws of Mongolia and in which the contribution of a foreign investor is not less than 20 percent of the share capital shall constitute a business entity with foreign investment.

2.A business entity with foreign investment shall become a legal person of Mongolia from the date of its incorporation and shall conduct its operations in accordance with the laws of Mongolia.

Article 12. Approval Procedure for Establishing a Business Entity with Foreign Investment.

1.The application of the investors establishing a business entity with foreign investment shall be subject to approval by a Central State Administrative Authority which is responsible for the implementation of foreign investment policy (hereinafter referred to as "Ministry of Trade and Industry").

2.An application shall contain:

i.
i.names, addresses and nationality of investors; ii.types and amount of investments; iii.the form of a business entity to be established; iv.main areas of investment and type of production and services to be undertaken; v.stages and duration of making and implementing the investment.

3. The following documents shall be enclosed with the application:

i.
i.information on the investors and a copy of the Certificate of Incorporation, if they are legal persons; ii.Memorandum of Incorporation of a business entity with foreign investment; iii.Articles of Incorporation of a business entity with foreign investment; iv.marketing, management, technology and other agreements related to the investment; v.technical and financial plans and estimates; vi.a confirmation of the investors' financial resources from the bank of the investors; vii.authorization from competent organizations of Mongolia to search for, extract and process natural resources, to use land and to be engaged in production and services which are subject to special authorization.

4. An application with the aforementioned enclosures shall be considered and decided by the Minister of Trade and Industry within 60 days from its receipt on the basis of the following assessments produced by the specialized organizations:

i. compliance with legislation;

ii. impact on the natural environment;

iii. meeting of health and sanitary requirements;

iv. appraisal of the level of technology.

5.Assessments referred to in paragraph 4 (ii), (iii) of this Article shall be based on international standards and standards of Mongolia.

6.The assessment referred to in paragraph 4 (iv) of this Article shall be made in accordance with regulations of the Government of Mongolia.

7.Should the establishment of a business entity with foreign investment be approved then the Ministry of Trade and Industry shall issue a Certificate of Approval.

8.If the activities of a business entity with foreign investment to be established are considered inconsistent with requirements of laws, environmental protection, health and sanitary standards or technological standards then the approval shall not be granted provided that the reasons for such refusal are given.

9.The form of Application and Certificate referred to in paragraphs 2, 7 of this Article shall be adopted for use by the Minister of Trade and Industry.

10.A business entity with foreign investment shall give the Ministry of Trade and Industry 30 days notice prior to altering the share capital or the Memorandum or the Articles of Incorporation. The Ministry of Trade and Industry shall examine such alterations according to the procedures set forth in this Article and shall give its ruling within 30 days.

Article 13. Valuation of Tangible and Intangible Assets

1.The value of tangible and intangible assets which will be contributed by the investors to the share capital of the business entity with foreign investment shall be mutually agreed to by the investors and be estimated in a freely convertible currency and in tugrigs on the basis of a common principle of valuation.

2.Conversion of tugrigs into a freely convertible currency shall be made at the rate of exchange fixed by Mongol Bank and applicable at the time of valuation.

Article 14. Authority of the Ministry of Trade and Industry Relating to Implementation of Foreign Investment Policy.

The Ministry of Trade and Industry with regard to foreign investment policy shall be authorized to:

i.

i.supervise the implementation of foreign investment legislation; ii.request assessments referred to in paragraph 4 of Article 12 of the present Law; iii.invite offers against tender projects involving foreign investment; iv.make selections from proposed foreign investment projects; v.grant approval to or reject the establishment of a business entity with foreign investments; vi.suspend or terminate the operations of the business entity with foreign investment; vii.any other rights conferred by law.

Article 15. Registration of Business Entities with Foreign Investment.

1.Upon the granting of Certificate of Approval by the Ministry of Trade and Industry, the General Department of State Taxation shall register the business entity with foreign investment and make the registration public.

2.Upon the authorization by the Ministry of Trade and Industry, the General Department of State Taxation shall register alterations to the share capital, to the Memorandum or to the Articles of Incorporation of the business entity with foreign investment.

Article 16. Suspension and Termination of Operations of Business Entities with Foreign Investment.

1. The operations of a business entity with foreign investment shall be subject to suspension or termination on the grounds provided for by the Law on Business Entities of Mongolia.

2. If the operations of a business entity with foreign investment are found to be in violation of any of assessments referred to in paragraph 4 of Article 12 of the present Law, the Ministry of Trade and Industry may suspend or terminate the operations of such business entity with foreign investment.

Article 17. Winding Up and Dissolution of Business Entities with Foreign Investment.

1.Within 14 days from the date on which a resolution to suspend or terminate the operations of the business entity with foreign investment has been adopted, the business entity with foreign investment shall submit this resolution to the Ministry of Trade and Industry.

2.A business entity with foreign investment which is under dissolution shall submit to the Ministry of Trade and Industry statement of the appropriate authorities which certify completion of all its payments and fulfillment, in accordance with the laws of Mongolia, of its duties to restore the natural environment.

3.The Ministry of Trade and Industry shall thereafter withdraw its authorization which had originally approved the establishment of the business entity with foreign investment, and shall inform the General Department of State Taxation of such annulment.

4.Upon the receipt of notice referred to in paragraph 3 of this Article, the General Department of State Taxation shall remove the business entity with foreign investment from the state register and make such removal public.

5.Should the operations of the business entity with foreign investment be terminated in preparation for dissolution, the foreign investor shall be entitled to transfer its returns referred to in paragraph 4 of Article 10 of the present Law upon completion of final accounts of the business entity concerned.

Article 18. Taxation.

1.A business entity with foreign investment shall be subject to taxation under the tax laws of Mongolia.

2.Granting to foreign investors or to a business entity with foreign investment treatment more favorable than that provided for by the tax laws of Mongolia shall be governed by the present Law and the laws and regulations in force which are consistent with the preceding.

Article 19. Exemptions from Customs Duties and Sales Tax (The article has been run out affect since February 1, 1998)

1.Technological equipment and machinery which form a part of the share capital of the business entity with foreign investment shall not be subject to customs duties and sales tax, effective from the date of approval by the Ministry of Trade and Industry of the establishment of the business entity with foreign investment.

2.Raw materials, components, spare parts and materials for production which will be brought in by business entities with foreign investment, except those entities in trading and catering, shall not be subject to customs duties for 5 years effective from the date of registration of the business entity with the General Department of State Taxation.

Article 2O. Income Tax Preferences. (The article has been rub out effect since February 1, 1998)

1.A business entity with foreign investment in any of the following areas shall be granted income tax preferences as set forth below, effective from the date its production starts:

2.i. power and thermal plants and their transmission network, highways, railways, aircargo and engineering constructions and basic networks of telecommunications shall enjoy 10 years of tax exemption and 50 tax relief in the immediately following 5 year period;

ii. mining and processing of mineral resources (except precious metals), oil and coal, metallurgy, metal processing, chemical production, machinery, and electronics shall enjoy 5 years of tax exemption and 50 % tax relief in the immediately following 5 year period.

3.Should a business entity with foreign investment which is not referred to in paragraph I of this Article export more than 50 per cent of its output, it shall be entitled to an income tax exemption for 3 years and 50% tax relief in the immediately following 3 year period.

4.A business entity with foreign investment which is not referred to in this Article, may be granted income tax preferences. Decisions in this matter shall be adopted by the State Great Hural on a case-by-case basis upon presentation by the Government of Mongolia.

5.Should a foreign investor reinvest its income in the same business entity with foreign investment which produced such income, the taxable income of the business entity concerned shall be subject to a deduction equal to the amount of such reinvestment.

6.If the activities of a business entity with foreign investment cover more than one of the areas referred to in paragraph I of this Article, the income tax preferences to be granted to such a business entity shall be in respect of the main area of activity.

7.A business entity with foreign investment which has been established by purchasing shares or securities sold by investment coupons under the Privatization Law of Mongolia, shall not be eligible to preferences set forth in paragraph 1 and 2 of this Article.

Article 21. Use of Land by Business Entities with Foreign Investment.

1.Land shall be used by the business entity with foreign investment on the basis of a leasehold and subject to conditions and procedures set forth in land laws of Mongolia.

2.A lease shall contain the terms and duration of use, the measures to ensure the protection and restoration of the natural environment to the original state, amount of annual ground rent, and the liabilities of the lessor and lessee.

3.A lease shall be made under the procedures set forth below:

i. a lease for the use of state-owned land by a wholly foreign-owned business entity shall be made between the Mongolian land-owner and the foreign investor and be subject to authorization thereto by the respective local Hural of Representatives and its Presidium;

ii. a lease for the use of state-owned land by a business entity with foreign investment to which a Mongolian investor is a participant, shall be made between the Mongolian land-owner and the head of the business entity concerned and be subject to authorization thereto by the respective local Hural of Representatives and its Presidium;

iii. A lease for the use of private freehold land by a business entity with foreign investment to which a Mongolian investor is a participant, shall be made between the Mongolian land-owner and the head of the business entity with foreign investment and be subject to authorization thereto by the competent state authorities.

4.Liabilities arising from a lease, referred to in paragraph 3 (ii), (iii) of this Article, which is entered into by the head of the business entity with foreign investment shall be borne by the Mongolian and the foreign investor in proportion to their contributions to the share capital of the business entity.

5.The duration of any lease shall be determined by the duration of the operations of the business entity with foreign investment. The initial term of a lease shall not exceed 60 years. The lease may be extended once for a period of up to 40 years under the initial conditions of the lease.

6.If a business entity with foreign investment is dissolved before the expiration of the lease, then the lease shall be terminated at the same time.

7.Leasehold land may be substituted or taken back for a specific state purpose. Decisions concerning this matter shall exclusively rest with the Government of Mongolia. Compensation for losses suffered by a foreign investor due to such action shall be effected without delay. The amount of compensation shall be determined on the basis of the value at the time of such substitution or transfer.

8.If leasehold land is used to the detriment of public health, the natural environment or the interests of national security, then the lease shall be canceled.

Article 22. Finances, Loans, Accounts, Inspection.

1.A business entity with foreign investment shall conduct its activities related to finances, loans, accounts and foreign currency operations in accordance with the laws of Mongolia.

2.A business entity with foreign investment shall keep its account books and balance sheets in accordance with the laws of Mongolia.

3.The accounts and financial and business transactions of a business entity with foreign investment shall be investigated by state financial inspection authorities or by chartered auditor in accordance with the laws of Mongolia. A foreign auditing organization may be invited, if required

Article 23. Insurance.

A business entity with foreign investment may be insured by a Mongolian insurance agency in accordance with the laws of Mongolia.

Article 24. Labour and Social Security Relations.

1.Business entity with foreign investment shall primarily employ citizens of Mongolia. Expatriates may be hired for a job requiring special or high qualification. The Ministry of Demography and Labour shall consider and decide this matter.

2.Matters of labour and social security related to the citizens of Mongolia who are employed by the business entity with foreign investment shall be governed by the laws of Mongolia on labour and social insurance.

3.Expatriates who are employed by the business entity with foreign investment shall be subject to income taxation according to the laws of Mongolia and shall have the right to transfer their income abroad after paying tax.

CHAPTER FOUR

MISCELLANEOUS

Article 25. Settlement of Disputes

Disputes between a foreign investor and a Mongolian investor as well as between a foreign investor and a Mongolian legal and natural persons shall be resolved in the courts of Mongolia unless provided otherwise by the International Treaties to which Mongolia is a signatory or by a contract between the parties to the dispute.

Article 26. Effective Date of the Present Law

The present Law shall come into effect on July 1, 1993.

10 MAY 1993. ULAANBAATAR